The Plough, the Loom, and the Anvil.

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COMPARATIVE IMPORT OF FOOD BY GREAT BRITAIN AND THE UNITED STATES.

In our last number we gave a comparative view of the export of food by Great Britain and the United States, in which it was shown that the former, having only three-tenths of her population engaged in the work of cultivation, exported of food alone at least fifty per cent. more than the whole export of food, cotton, tobacco, and all other agricultural products, by the people of this country, at least seven-tenths of whom are engaged in agriculture. It was also shown that she was enabled so to do by aid of that wonderful condensing machine, the human stomach, by aid of which the food and wool are converted into cloth, and the food and ore into iron, thereby reducing the whole into the compact form required to fit it for cheap transportation to distant markets; and that if the people of this country desired to find a profitable demand for their surplus of food,—always large, and tending rapidly to increase,—they must imitate the example of England, and bring the consumer to take his place by the side of the producer, thereby saving the labor now employed in the work of transportation and exchange, and the manure now wasted on the road and in distant markets.

Small as is the proportion of her population engaged in the labor of agriculture, England supplies herself almost entirely with food, and the day is now not far distant when she will probably cease to look abroad even for a single bushel of grain. Enthusiasts in the cause of that system which is called free trade, and which *compels* men to waste labor in raising pounds of cotton, or tobacco, when, had they a market near at hand, they might have as many bushels of potatoes and turnips; and bushels of wheat where they might have twice as many hundred weights of beef and mutton; of that system which *compels* men to fly from their fellow men and seek the West, there to raise food, when they would prefer to stay at home and consume it:—enthusiasts such as these, we say, point to the vast import by that country in 1847, and confidently predict that her power of consumption must go on to increase with our power of supply, and that all we need to enable us to dispose of our surplus, is the total abolition of protection to our farmers in their effort to induce the loom and the anvil to come and take their natural places by the side of their ploughs and their harrows. How far all this is true may best be judged by a comparison of the quantity of food imported into Great Britain in 1847, when so large a proportion of the labor power of the country was turned to the making of roads by men who were thus converted from producers of food into consumers of food, and when the potato rot produced a vast demand of food *for* Ireland, *from* which had previously been furnished immense supplies to the English market, with that imported in the year just now closed, as shown in the following table:—

		1847.		1848.
Animals	No.	198,000	.	174,000
Beef	cwts.	109,000	.	98,000
GRAIN,				
Wheat	qrs.	2,418,000	.	2,058,000
Do. meal	cwts.	6,296,000	.	1,157,000

Indian corn . . .	qrs. 3,500,000	.	1,397,000
Do. meal . . .	cwts. 1,437,000	.	210,000
Other kinds of corn . .	qrs. 2,962,000	.	2,315,000
Do. meal . . .	cwts. 2,285,000	.	255,000
Rice	cwts. 1,357,000	.	944,000

Converting the whole of this mass of vegetable food into quarters, allowing four hundred weights of flour and rice to be the equivalent of five hundred weights of grain, we obtain an import of above eleven millions of quarters for **1847**, and one of only **6,300,000** for **1848**; and even this is very far beyond the average that can be needed, as the almost total exhaustion of the granaries in **1847** had produced a vacuum that required to be filled, and farmers who had obtained high prices in the previous year, not being compelled to force their stocks upon the market, were enabled to fill it.

Great, however, as is the reduction in regard to the general import, how infinitely greater is it when we restrict our examination to that portion in which the farmers of this country are particularly interested. Poland and Russia, Sicily and Egypt, supply grain, for they are deficient in the means of converting it into flour, having kept themselves poor by making no market in the land for the products of the land. This country alone, we believe, supplies flour, and it is to that part of this table such of our farmers as desire to speculate upon their future prospects should chiefly look. Doing so, they obtain the following results:—In **1847**, the import of wheat flour exceeded six millions of hundred weights. In **1848**, it had fallen to little more than one! In the former year, that of all other kinds of meal was **3,700,000** cwts. In the latter, it had fallen to **465,000**! Summing up the whole, we obtain above ten millions for the first, and little more than a million and a half for the last; and even this is far beyond any probable future average.

Admitting, however, for a moment, that the whole quantity should continue to be equivalent to four millions of quarters, or thirty-two millions of bushels of grain of all descriptions, how small is it compared with the food imported by this country, and how infinitely small when we consider the exceeding difference in the proportion which the population of Great Britain engaged in the labor of agriculture bears to that of the United States. We consume annually about **110** millions of dollars of foreign products, nearly the whole of which large sum represents food. For the production of some portion of this our climate is unfitted, and coffee and tea, and some other articles, may be produced elsewhere at less cost of labor than here. Striking these out, and making every other allowance, we shall find at least sixty millions of dollars of food that we could produce at less cost of labor than any other people in the world, were our system one that tended to promote concentration for the cultivation of the rich soils of the earth, instead of driving our people to seek the West, there to commence the work of cultivation on poor ones, and to waste in the work of transportation to market a large portion of their small returns.

The iron we import represents the food of the men who mined the ore and the coal, of those who built the furnace and made the machinery, and that of those who worked the furnaces and transported their products to market. The cloth we import represents the food of the Hindoo rice-grower, that of the Australian shepherd, and that of the numerous persons engaged in the work of transporting the wool, the cotton, and the rice, and converting them into cloth. We are thus perpetually engaged in the work of importing food, while we are everywhere seeking markets for the vast quantity that is rendered surplus by our pursuance of a course of policy that prevents our farmers from obtaining a market on the land for the products of the land. ***We are the largest importers of food in the world***, and yet our farmers are taught

that if they would find a market for their surplus in the form of food, it must be by importing foreign food, duty free, in the forms of cloth and iron.

"We exported last year," says the Secretary of the Treasury, "$130,203,709, in value of domestic products and fabrics, exclusive of specie, and under low duties this must go on augmenting. But how can foreign countries pay for these exports if we will take no imports, or very few, in return? Clearly, our exports must in time cease, or fall to a very small sum, the foreign markets must be destroyed, and the price of our staple exports of cotton, of rice, of tobacco, of breadstuffs and provisions, must decline, for we cannot take the return in specie from abroad without exhausting those markets in a single year, nor can we consume at home this augmenting surplus."

It is here assumed that free trade tends to increase the price of our staple exports. If it does so, it must increase our powers of consuming the articles we are accustomed to receive in exchange for them. If it is so, then protection to the farmer, in his effort to induce the owners of looms and anvils to come and take their places by his side, must tend to diminish the prices of those staples, and must diminish the power of consuming cloth and iron, and all other of the commodities that he is accustomed to receive in exchange for his food, and of course to diminish the market for his surplus. How far these views are correct may, we think, be ascertained by an examination of some of the tables appended to the Secretary's report. In the following one, which we have compiled therefrom, are given—first, the population in each year, and, second, the total amount of imports, exclusive of specie, consumed in the Union. To these we have added the amount of consumption of foreign merchandise, per head, in each year.

	Population.	Total consumption.	Per head.
1830	12,856,165	$49,575,000	$3 87
1831	13,277,415	82,808,000	4 23
1832	13,698,665	75,327,000	5 50
1833	14,119,915	83,470,000	5 92
1834	14,541,165	86,973,000	6 00
1835	14,962,415	122,007,000	8 20
1836	15,383,665	158,811,000	10 40
1837	15,804,915	113,310,000	7 00
1838	16,226,165	86,552,000	5 40
1839	16,647,415	145,870,000	8 70
1840	17,068,666	86,250,000	5 00
1841	17,560,082	114,776,000	6 50
1842	18,051,499	87,996,000	4 90
1843	18,542,915 {9 mos., Sept. 30 to June 30,}	37,293,000	*2 67
1844	19,034,332	96,390,000	5 00
1845	19,525,749	105,599,000	5 40
1846	20,017,165	110,048,000	5 50
1847	20,508,582	116,258,000	5 70

It will be observed that the fiscal year now ends with June 30, and that this last one includes the last half of 1846 and the first half of 1847, when the power of consuming foreign products remained in the position in which it had been placed by the action of the tariff of 1842, under which the farmer enjoyed full protection, and was enabled to draw to his side the consumers of potatoes, and turnips, and hay, and milk, and veal, and all other of the commodities of which the earth yields largely, and was therefore not forced to depend exclusively upon those articles that would bear transportation to distant markets.

* The consumption in 9 months was at the rate of $2 per head, equal to $2 67 for the year.

The whole amount of foreign merchandise consumed in the Union from 1821 to 1829, a period of nine years, was $516,000,000; and as the average population was about 11,200,000, it follows that the consumption per head was almost exactly five dollars. In 1830 it had fallen, from causes which we are unable now to ascertain, below the average; but in the three following years, ending Sept. 30, 1833, a period of perfect protection, it attained a greater height than it had reached in any two successive years of the previous period,—thus proving that protection to the farmer and planter had not diminished their power of consumption, nor had it produced a necessity for draining other nations of their specie.

In the year ending September 30, 1835, at which period the Compromise Act had scarcely become operative, the power of consuming foreign merchandise rose to $8 20 per head, a greater height, we believe, than it had ever before attained,—affording new proof that the farmer and planter were not compelled to drain the world of specie.

In the following year, vast quantities of capital were forced into the country, in the shape of cloth and iron, to be applied to the making of roads, and the consumption reached $10 40 per head, but the consequence in the next succeeding one was a drain of our own specie, and the stoppage of all the banks in the Union.

With each successive year, we now find an increasing approach to perfect freedom of trade, with a gradually diminishing power to consume foreign merchandise, which we see to have fallen in 1838 to $5 40; in 1840 to $5 00; in 1842 to $4 90, and in the period ending June 30, 1843, to only $2 67 per head, a lower point than in any previous period of peace from the organization of the government, the power of consumption having been almost destroyed in the effort to reach perfect freedom of trade.

As the Tariff of 1842 comes gradually into action, we find a change in the contrary direction, and the power of consumption rising gradually, until, in the year ending June 30, 1847, it attains $5 70, being nearly the point which it had reached previous to the passage of the Compromise Act.

We now desire the attention of our agricultural friends to the wonderful difference resulting from an increase in the consumption of foreign food in the form of cloth and iron manufactured in distant lands, and that which follows an increase in the consumption of food grown at home, and eaten at home by the men who convert food and wool into cloth, and food and ore into iron, enabling the producer to return to the land the refuse of its products, and to pass successively from the cultivation of wheat, and oats, and rye, of which the earth yields by bushels, to that of potatoes, and turnips, and carrots, of which it yields by tons, but which are therefore worthless when a market is not made on the land for the products of the land.

The total excess of consumption in the eight years following 1834, over the average of the four previous years, was only the small amount of 250 millions of dollars, although the population had grown in that period from fourteen to eighteen millions. Small, however, as it was, it caused such a drain upon the resources of the country as to involve it in almost utter ruin. Factories and furnaces were closed, farms were abandoned, States were rendered bankrupt, and the Union itself was reduced to the humiliating necessity of soliciting aid in foreign lands, to meet the demands upon the Treasury in a time of profound peace! Such was the result of using foreign food in the form of cloth and iron.

Let our readers now compare with this the result of the following years of protection. The manufacture of iron grew, between 1843 and 1847, from 350,000 to 700,000 tons, worth, on an average, in its various forms of stoves, and railroad iron, and axes, and machinery, little short of a hundred dollars

per ton. The consumption of cotton rose from 300,000 to 600,000* bales, worth, in the form of cloth, at least a hundred and fifty dollars per bale. The manufacture of woollen cloth doubled in the same period. The *increase* in the home production of *the single year* 1847 over that of 1843, in these three species of manufacture, was at least a hundred millions, being almost half as much as the increased import of *eight years* under the gradual reduction of the Compromise Act; and what was the result of this consumption of home-grown food? Did it leave the nation in a state of prostration? Was it necessary to send abroad to negotiate loans even for carrying on an expensive war? It was not. The system diffused universal prosperity. Mills, and furnaces, and rolling mills, were built. Farms increased in value. States were enabled to resume payment, and the Union negotiated large loans without difficulty; and all this was the result of the universal demand for labor produced by the tariff of 1842, by aid of which the farmer and planter were gradually attracting to their sides the looms and the anvils and the men who employed them: *and with every step in this progress our power to consume foreign merchandise increased*, having risen gradually from $2 67 per head in the free-trade year 1842–3, to $5 70 per head in the year of protection, 1846–7. To this great fact we beg the special attention of our free-trade readers, and ask them now to say if it does not afford some evidence that the nation which is enabled to return to the land the refuse of the products of the land, as was then the case, is not likely to be a better customer to its neighbors than such a nation as existed here in 1842, when mills and furnaces were closed, and when tens if not hundreds of thousands were forced to seek the West for want of employment in the East.

We have been, and we are, the greatest importers of food in the world, and therefore it is that our farmers and planters are perpetually seeking abroad that market which the policy of the nation denies to them at home. We drive to the West, there to become producers of food, the men who would desire to remain at home to be consumers of food, and thus produce that surplus, constantly augmenting, which the honorable Secretary insists that "we cannot consume at home." Had the tariff of 1828 remained undisturbed, that surplus would long since have ceased to exist, and our planters, dividing their attention between food and wool, would have experienced no necessity for holding meetings to devise measures for reducing their great surplus. The consumption of this country, alone, would *long since* have reached a million of bales, and they would be receiving more for the balance that they could spare for foreign markets than they now receive for the whole. They now raise cotton, because they can sell nothing else, and they send it abroad because they have destroyed the men who would have manufactured it at home, while eating the corn for which they have now no market; and this they call freedom of trade. Had the tariff of 1828 remained unaltered they would now be surrounded by producers of cloth and iron, who would already have attained that point predicted by the Secretary, when the manufacturers themselves, as is now the case in England, would be clamorous for perfect freedom of trade.

Let every farmer and every planter endeavor to engrave upon his mind the idea that "population makes the food come from the rich soils," and that if they would cultivate such soils, they must unite with their neighbors in obtaining the pursuit of such a course of policy as will enable them to stay at home to be his customers, instead of flying to distant lands, there to become his rivals.

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* See page 469 of our February Number.

CULTIVATION OF FOREIGN GRAPES IN THE UNITED STATES NOT TO BE ATTEMPTED SUCCESSFULLY.

CHANGE OF PLUMAGE IN FOWLS.

Paterson, Feb. 3, 1849.

My Dear Sir—You ask me for my experience in the culture of European grapes, by open culture—that is, without glass or artificial heat. I agree with Mr. Longworth, of Cincinnati, and Mr. Samuel E. Perkins, of Boston, that it is in vain to hope, in this country, or at all events in my district, to raise fine fruit from European grapes by open culture. I have tried it effectually for seven years—the first and second year of bearing I had some fine grapes—Black Hamburgs, Black Clusters, and Chasselases: but the third year of little value; the fourth, of no value; and last year so bad that I have dug up 700 vines, and will give them to any person who wants them. The truth is, I would not accept of the vines of any foreign grapes as a gift, to raise in open culture. Under glass, as you know, with or without fire, we raise fine grapes. For the table, or for wine, I would manure my vines differently: for the table I would give my borders a food of flesh, of bones, of charcoal, of cow-dung, of good turf from an old pasture, of oyster shells, and some salt, some lime, and some plaster of Paris, and, if there was no iron in the soil, some common copperas, and then to all these add some wood ashes. Wherever a border has been long made, give it a top dressing of bone dust, plaster of Paris, and wood ashes. I have found that a weak decoction of potash dissolved in water, once or twice in the season, did great good; it is upon this principle I use whale-oil soap for all my fruit-trees and grape-vines, and more than any man in the country.

We had a discussion about color in birds and animals. Some time since, my friend, N. Biddle, gave me a pair of white Guineas—the cock died before I had any increase. I got a common slate-colored cock—part of the chickens were white, part gray—I killed the gray—the next season all were white—this year all white but one. Again, I had a very fine and prolific breed of white turkeys—I kept none other—all the progeny for three years were white; but this last year two of the chicks were black, and one, a cock of most magnificent proportions, is the handsomest black one can see.

My man Nicholas has caponized for me eighty cocks—I lost but seven; and as they bled to death we eat them. They are of double the weight of those not altered, and far more tender. I had one turkey caponized; this I will keep until you come on and eat it with me. Next year I will alter several turkeys. Why should they not improve as pigs and sheep do? Who ever tried a duck or goose? R. L. C.

In the physiology of birds there is nothing more curious, and, if susceptible, worthy of investigation, than the laws which influence the color of their plumage. It may be that medical men, whose business it is to study these things, understand all about it. We confess our ignorance. It is asserted, for instance, that "it is by no means a rare occurrence among game-fowls, blacks, blues, and reds, to change their plumage and become spangles and whites." Why is it said particularly among game fowls? There is a coincidence which gives significance to this remark; leading us to inquire whether this change of plumage has been observed in regard to fowls that have never felt the touch of cold steel? In the Old Turf Register and Sporting Magazine, the first periodical of its kind established in the United States, we recorded the case that occurred in 1807, of a milk-white cock, raised by Mr. Philips, of South Hampton, Va., who won a fight at Bellefield; and the next spring he was a red spangle, and lost at Halifax. Allen J. Davie, well known and respected among agriculturists and sportsmen in all the south, bred a game cock in Madison county, which, in 1821, was a blue-gray; in 1822 he was still a blue-gray. In 1823, he

was milk-white, or smock, as the English term it; and in 1824 he became sky-blue. This old bruiser won a match for each change, conquering under whatever flag he fought.

The color of plumage and of hair, &c., is attributed to the influence of some peculiar coloring matter in the system. What produces in these cases the alteration of that coloring matter? Who in the country has not wondered, as he rides along the road, or as he looks at his own herd of cattle, at the exact similitude which is often observable in the marks of the *cow and her calf!* Truly, "There are more things in heaven, Horatio, than are dreamed of in our philosophy." And this is one of the things regulated by laws beyond our ken.—*Editors P. L. & A.*

LUCERNE.

To those who are acquainted with the great value of this plant, especially for house-feeding, or soiling, as it is called, it has been a matter of just surprise that so few farmers have entered upon its cultivation. Their neglect to do so can only be imputed to ignorance of its advantages, or to that aversion which farmers are too apt to entertain towards any thing which requires more pains than usual in the preparation of the land; for, in that, after all, consists the sole difficulty in *establishing* a crop of lucerne—for, once well established in the ground, it will yield four or five heavy crops of the most succulent and palatable green food for stock of all kinds, every year, for at least six or eight years. Moreover, it may be cut two weeks earlier than clover, and would meet with remunerating prices at all our livery stables, long before clover can be had.

The soil most suitable for Lucerne is that of a deep, dry nature—the richer of course the better; but so it be *dry*, it may be loamy or gravelly, or even sandy land, if rich. No grass equals it, when once established, for standing drought; for it sends down its large root to a great depth, and therefore needs, or is benefited, by deeper tilth than usual; but the great desideratum is to have the soil clean of all extraneous vegetable matter, so that the lucerne may get early and complete possession of it. The farmer will do well, then, to select a spot which has been last in a *cleaning* crop—such as carrots, cabbages, tobacco, &c. Before the seed is put in, the soil must be rendered perfectly fine by ploughing, as often as need be, and breaking it well down by harrowing. If manure be used, it should be *well rotted* manure, perfectly free from seed of all kind; for the object to be kept constantly in view, is to render the land perfectly free from weeds, and at the same time mellow and friable.

The seed is of rather lighter color and larger than that of clover—and the fresher the better. If sown broadcast, 18 or 20 pounds of seed will be required to the acre; less, of course, if drilled. In drills 18 inches or 2 feet, six to nine pounds. If 12 inches apart, then ten to twelve pounds; but nine inches apart drills will be best, and will take say sixteen pounds.

As to the time of sowing, the sooner the better in spring, to give the plant every chance against its enemies. The seed should be lightly covered, say not more than two inches, and therefore best done with a light brush harrow. It is estimated that one acre will support from four to six horses, or cattle, through the summer months; but care should be taken not to give it in too large quantities, especially if damp, as cattle are liable to be *hoven* or *blown* with it, as with clover. We have known a lot of it to afford four good crops a year, for eight or ten years, and give the notice now, that no time may be lost in the preparation of the land.—*Model Am. Courier.*

To preserve apples for domestic use a long time, place first, a layer of *chaff* on the bottom of the barrel, sprinkled with quicklime, and then a layer of apples, and so on till full.

FRIENDLINESS OF THE FRIENDLY.

ANNEXED are extracts from two letters recently received. We give them from a desire to show the kindliness and the liberality of feeling that exist among many of our subscribers, differing so much as it does from that so frequently found by other editors, and sometimes by ourselves. It is the true spirit. Men should be willing to read doctrines opposed to those which they have been accustomed to hold as true, for unless they do so, how can they be certain that they have the truth? The first teachers of Christianity—of the great law which teaches "peace on earth, and good-will to all men,"—preached to men who were as firmly convinced of the truth of other doctrines as are now the opponents of that of protection; and if those who heard them had treated them as men now treat editors, what would have been the progress of true religion? Let an editor broach an idea in opposition to one held by any of his subscribers, and the effect is felt in an order to "stop my paper;" whereas if his reader desired to be *assured* of the truth of his own views, his true course would be to read the arguments opposed to them, and satisfy himself of their weakness. The main difficulty experienced by editors who desire to act independently, and to teach what they believe to be true, is that so many of their readers have adopted the ideas of others, upon which they have not themselves reflected, and then when contrary ones are presented, being unable to prove their falsehood, while unwilling to admit their truth, they become dissatisfied with themselves, and stop the journal to prevent a recurrence of the unpleasant sensation. Far different from such men are the writers of these two letters. Being men of sense, they are not afraid to have presented to them ideas in opposition to their own. They know that if our arguments are weak, they can do them no harm, and that if they are strong—such as cannot be answered—they may do them good. After careful examination of the facts presented to view throughout the world, we have arrived at the conclusion that the plough has never thriven when distant from the anvil and the loom, whereas it has always thriven when near to them. Here is a very simple, but very important proposition—one in which every farmer and planter of the country is directly interested in seeing fairly and fully examined; and every such man should feel himself indebted to those who would take the trouble so to do, thereby enabling him to form an opinion for himself, after a full view of both sides of the question. Throughout the whole South newspapers abound in which are taught the doctrine that farmers prosper most who depend most on foreign markets; and if we administer poison, the antidotes to it are so numerous that we can do little harm.

Knoxville, February 5, 1849.

MY DEAR SIR:—I received your very kind and friendly letter in due time. Enclosed is one dollar for a copy of your work published on "Sheep Husbandry," you spoke of. When I receive a copy I can judge whether it will be successful at the South. At least I can prejudge it if it is interesting as some of your agricultural addresses.

Though a young man, I am truly a friend and well-wisher of yours, and therefore take the liberty to suggest whether you would not succeed better in enlarging your subscription, and interest, and usefulness, and influence, by avoiding prejudices of men by trenching rather too close upon the Tariff question, which is political, and which the blind prejudices of many, particularly of the South, where there is more need of enlightenmen' upon agriculture and political economy, take alarm at your writings and turn against you, as your last paper shows Mr. Ritchie has done. Will you be good enough to send me the January number, as I have not read it, as it miscarried, or I have lost it, and I wish to read it and keep it and all numbers, very carefully.

Very respectfully, S. R.

The next extract is from a highly enlightened and independent farmer, residing not far from Fredericksburg, Virginia. It is in the spirit which it seems to us ought to animate every lover of truth, and every friend of toleration. He overpaid for "The American Farmer" enough to cover a year's subscription to "The Plough, the Loom, and the Anvil." The following remarks were merely incidental.

I take it for granted you are fully aware that I utterly repudiate the political doctrine of "The Plough, the Loom, and the Anvil," but having lived long enough to have my confidence in men and their opinions shaken, (I include myself with others,) I am not only willing but anxious to hear both sides of every important public question.

Yours, very respectfully, W. P. T.

Finally, in the way of general explanation, as well as of respectful reply to our Knoxville friend, we are free to confess, that incorrigible as has ever been our partiality for all that relates to agriculture, and pressing as was the necessity for turning our hands to something for bread, we should yet not have again undertaken to establish a new journal solely to illustrate *practical agriculture!* For that purpose, there were already in existence many periodicals as ably conducted as they were badly supported. This was not the case when we established the first one of the kind, thirty years ago. Then there was necessity to elicit and promulgate for the public use, the knowledge and experience locked up in the minds of individuals; and we are not sure that were it now our object exclusively to communicate the processes and results of the best systems of field-practice, in all the various branches of agricultural industry, we could do better than go over and winnow the fair and sound grain from the immense mass of valuable matter in the old volumes of that work. What subject has been lately discussed and presented with more ability than there? What root crop or grain crop, for which we are continuing to give premiums, is exceeded by those registered in "The American Farmer," twenty-five years ago? But casting about now for what has ever been the object of our humble ambition—to see how we could make our own employments and the pursuit of our own subsistence, agreeable, instructive, and useful to the public, it did occur to us, and every day's reflection confirms us in the belief, that what is now needed most, to place *practical agriculture* on a prosperous and stable foundation, is to lead the farmer and the planter to study the *political economy*, as well as the scientific principles that belong to his profession. Instead of being the most indifferent, they of all classes should be most vigilant and alive to the *proceedings of government*, as they are calculated to benefit or to injure *the great landed interest of the country!*—and in scanning the spirit of the laws, the great test, as it seems to us, is to see whether they tend to *draw together or to separate the producer and the consumer.* We believe that the policy which draws them together, diminishing the cost of transportation and exchange, between the producer and the consumer—the producer of cloth and of iron to be consumed by the farmer, and the producer of wool and of food to be consumed by the manufacturer of cloth and iron, is that which will most contribute to individual wealth and national independence—so believing, though entirely depending for support on the success of this journal, would it not be faithless in us not to preach what we believe to be the true doctrine, even though gentlemen choose, as they have a perfect right to do, to reject the whole work, with all its other forty or fifty pages of practical matter, on account, not of its *party*, but of its political economy? After all, we may be wrong. We make no pretensions to infallibility; but—show us that we are so! "Strike, but hear!"

EFFECTS OF THE TARIFF OF 1846

UPON THE MAKERS OF GLASS AND IRON.

We take the following from one of our exchanges:

"The following is a list of the window-glass workers who have determined to discontinue their operations one and a half months before the usual time, in consequence of the surplus of glass in the market, from excessive importations and the stagnation of domestic industry:—

Peter Shreve & Co.,	of the	Waterford Works,		New Jersey.
John G. Rosenbaum,	"	Malaga	"	"
Richards & Brother,	"	Jackson	"	"
Hay, Bowdie & Co.,	"	Winslow	"	"
Mulford, Hay & Co.,	"	Millville	"	"
James M. Brookfield,	"	N. Columbia	"	"
—— Vangilder,	"	Marshallville	"	"
John H. Coffin,	"	Hammonton	"	"
Jesse Richards,	"	Batso	"	"
Benjamin Wilkins,	"	Medford	"	"
Daniel E. Estell,	"	Estellville	"	"
Baker & Brother,	"	Baltimore	"	Maryland.
A. R. & S. H. Fox,	"	Sand Lake		New York.
	"	Durhamville		

"This will diminish the manufacture of window-glass about 100,000 boxes, and throw out of employment nearly one thousand persons.

"The conviction is fast obtaining ground among the glass-makers, that the American markets, under the present tariff, must be given up to the foreign manufacturer, unless the cost of making the article can be materially reduced.

"On the first of March, Messrs. Cooper & Co., of Trenton, will stop the manufacture of railroad iron, and six hundred worthy men, with families dependent upon their daily labor, will be thrown out of employment. The manufacture of railroad iron will be wholly abandoned in this country, and the large numbers who have been comfortably sustained, and at good wages, will be beggared. Foreign iron—4000 tons of heavy T rail—have been contracted for by the Lancaster and Harrisburg Railroad, at $45 per ton, delivered at New York, the making and delivery of which would cost the American manufacturer $52 50 per ton."

Every farmer should recollect that whenever cotton-mills are closed, furnaces abandoned, rolling-mills and glass-houses discontinued, the persons who have been accustomed to consume food while producing cloth, and iron, and glass, are compelled to seek to produce food for themselves. They go West, and there they raise wheat, and corn, and pork, that are to seek a market in Europe, and in seeking it they overwhelm the farmers of the East. The tobacco planter of Maryland is crushed by his rival in Ohio and Kentucky. The cotton planter of South Carolina is crushed by his rivals in Alabama and Mississippi; and the farmers of Pennsylvania, New York, and New Jersey, are crushed by their rivals in Illinois and Wisconsin. The necessary consequence of this is, that men are compelled to fly from the vicinity of rich lands, uncultivated, in the old States, to commence the work of cultivation upon others, which are of inferior quality, in the new ones, and every man thus driven abroad tends to compel others to follow his example. Had South Carolina and Georgia turned their attention to manufactures, thousands who have been driven abroad to raise cotton in Alabama and Mississippi, would be now engaged in raising food at home, the price of cotton would never have fallen so low, and those States would now be advancing in wealth and population more rapidly, perhaps, than any others in the Union: for they now need nothing but population to give them wealth. So with Virginia and Maryland. Their people fly West to raise tobacco, and

the constant increase in the supply from the West, breaks down those who have thus far remained at the East. Let every man in those States examine the facts for himself, and he will find that we have here presented the true view of the case. If he be a land-owner, let him satisfy himself that it is "population that makes the food come from the rich soils," and let him unite with his neighbors in the endeavor to bring about that system of legislation which will enable men to remain at home, combining their efforts for the cultivation of the rich soils and thus improving their physical and moral condition, instead of flying from home to barbarize and impoverish themselves among the wilds of Texas, Arkansas, Oregon, or California. The plough never has flourished but in connection with the loom and the anvil, and it never can do so, for the waste of labor and manure, when they are separated, is greater than the value of all the cloth and iron that can be consumed. Let every man, then, put his shoulder to the wheel in aid of the measures required for bringing about that connection, and let every one recollect that protection is emphatically *a planter's and farmer's measure.*

ON THE COMMON DEFICIENCY OF AGRICULTURAL IMPLEMENTS.

To a close observer of the state and practice of American agriculture, nothing is more apparent than the want of thorough *tillage*, or preparation of the ground, for the reception and production of crops. There is not one person, or one crop in a hundred, with or for which that preparation is thorough. The ground is left full of weeds, or the roots of weeds and clods, which prevent the access of air and of moisture, and of the roots in search of what air and moisture only can supply for the growth of the plant. This slovenliness and imperfection in tillage, proceeds from various causes—too often from ignorance, thoughtlessness, and downright want of care on the part of the cultivator, but more frequently for want of the *necessary implements.* It would be quite safe to assert that there is not in the United States one farm in one hundred that is not lamentably deficient in the number and suitableness of its implements of culture—and this is more especially the case in the South, where population is sparse, and where the loom and the anvil, the manufacturer and the machinist, are not to be found in the neighborhood of the plough. Long convinced of the truth of what is here said, we are prompted the more readily to select the following from a late number of "The English Farmer's Magazine."

OBSERVATIONS ON THE IMPLEMENTS OF AGRICULTURAL TILLAGE;

And a description of an Improved Implement, by which the operation of tillage may be efficiently performed, at a great saving of labor, time, and expense.

BY JOHN EWART, LAND-SURVEYOR, ETC., NEWCASTLE-UPON-TYNE.

An indispensable preliminary in estimating the efficiency of any instrument is a careful examination of what is sought to be effectuated by its operation; as it is only by comparing the effect produced with the object in design that we can with certainty pronounce upon the extent of its usefulness.

The operation of preparing the ground for the growth of cultivated plants is what is intended to be understood in the subsequent observations by the term "tillage," by which three objects are sought to be attained: first, reversing the surface of the soil; secondly, dividing its mass so as to present the greatest number of particles to the contact of air and moisture, or rendering the earth operated upon capable of ready absorption of these elements; and thirdly, to remove whatever spontaneous vegetation may be present, that the soil may not be exhausted of nutritive principles required to promote the growth of plants designed to be cultivated

The purposes above-mentioned are, perhaps, as perfectly accomplished by the operation of the spade as can be desired; but an insurmountable

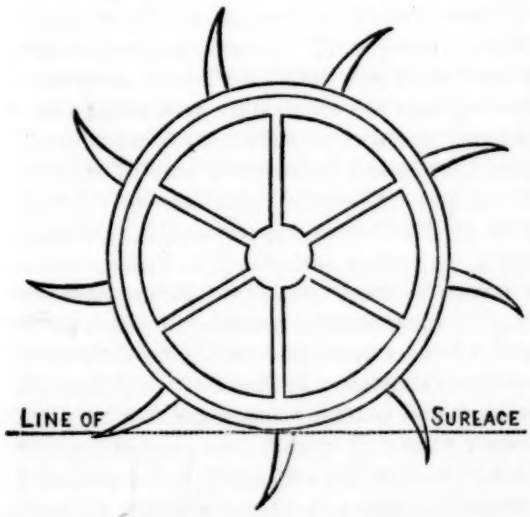
obstacle to the use of that implement in tillage on an agricultural scale arises from the difficulty of the requisite number of laborers to prepare a sufficient space of ground for the reception of any crop in due season. And supposing a sufficiency of workmen to be procurable that might be required at one season, the difficulty, or rather impossibility, of finding them with profitable employment during the remainder of the year, will confine the use of the spade to the tillage of horticulture, or of very limited extents of ground, in the production of agricultural crops.

In reviewing the different implements in use in agricultural tillage as to the extent to which each is adapted to accomplish the purpose intended, and commencing the notices with the plough, it will be found, on very slight examination, that the capability of that implement is confined to the first of the objects of tillage previously named—the turning or reversing the surface of the soil. In doing which, when it lays the furrow-slice in a proper position without waste of power by undue resistance in passing through the soil, it is all that can be looked for in an implement of the kind. In the performance of its office in the best manner of which the implement is capable, the tillage operation of the plough, limited as it is, is very imperfect in effect; as it not only compresses, but by its sliding action it also smoothes the surface by filling up the interstices between the particles wherever any part of the implement comes in contact with the soil; thus rendering all descriptions less capable of absorbing, and that of a clayey nature almost impervious to air and moisture, especially when the latter mentioned kind is in any degree approaching to a state of wetness. So that in the ordinary mode of agricultural tillage, by the compression and glazing, as it were, of the subsoil by the action of the sole of the plough, the pasture of plants is limited in depth to the depth to which the plough acts, and it requires the mass of the furrow to be pulverized by the action of other implements before the stirred earth (especially clayey soils) is capable of saturation with air and moisture—a condition of the soil, independent of all others, indispensable to vigorous vegetation.

The implements of agricultural tillage designed for cleaning and pulverizing the land are the harrow in various modification of form, and the roller, with either a plane, spiked, or notched surface. Most, or perhaps all of the implements just referred to, are efficient in the purposes they are designed to accomplish. The simple harrow, with its straight teeth, is only capable of—as in fact it is all that it is intended to accomplish—stirring the earth in a horizontal direction. Many of the modifications of the harrow, such as Finlayson's patent self-cleansing harrow, Ducie's drag, Biddell's scarifier, &c., are adapted for a more extensive operation; for they not only stir the earth in a similar manner to the common harrow, but also at the same time bring weeds and clods from the depth to which they act to the surface, so that the former may be gathered by the harrow or rake, and the latter crushed by the action of the roller. Of implements of the roller kind having plane surfaces there is nothing in regard to them requiring notice, except that those formed of hollow cast-iron cylinders in two separate parts in their length are the best; and of those having spiked or notched surfaces, Crosskill's patent clod-crusher is the most effective in its operation of any that has hitherto been invented. Yet on clayey land, when in a state of any degree of toughness, the action of this implement kneads and moulds the particles of the clods into lumps about the size of hens' eggs, still more compact than the masses it has broken, so as to require, in frequent cases, after its use, the action of a smooth-surface roller to produce a tilth of soil sufficiently comminuted for the reception of turnip or other small seed. The defect pointed out in this very excellent implement may perhaps be

easily rectified by some trifling alteration in the arrangement of the points, as the evil seems to arise in a great measure from the points being too closely set.

The economy in the use of improved cleaning and pulverizing implements is very great, as by it repeated ploughings—the most expensive and tedious of all tillage operations in agriculture—may be dispensed with, or, at any rate, become less required. In illustration of what has just been advanced, it may be instanced that in the working of a fallow with the common straight-toothed harrow and the plane-surface roller, it is necessary, from the operation of the common harrow being limited to the mere gathering and raking together of the weeds brought to the surface in ploughing, to plough so often as any foulness remains in the soil. Pulverization of coarse clayey land being chiefly effected by the crushing action of the roller, the process of cleaning is quite as efficaciously performed by the use of the improved implements previously mentioned as by the plough, and at a saving of time, labor, and cost, in proportion as the breadth of land covered by the breadth of such implement exceeds the breadth of the furrow turned by the plough. Were an implement to be used combining a simultaneous action of cultivator and roller, without much increase of power being required, labor and time would be thereby still further economized in the operation of agricultural tillage.



The advantages spoken of would probably result from the use of a roller formed of separate wheels, having rims about four inches wide, revolving independently on a round common axle, the peripheries of such wheels being furnished with curved coulters, of a length suitable to the depth of surface-soil in which the implement is intended to work—say from six to seven inches. Twelve wheels of the above-mentioned breadth would form a roller four feet long, of which a diameter of twenty-four to thirty inches would be commodious in point of size. The accompanying diagram represents a vertical section of the implement above described.

The operation of the implement described above will be as follows:—Whilst the rims of the wheels act as a powerful plane surface roller in crushing the clods, the curved coulters stir the earth to admit air, and, at the same time, bring to the surface all weeds and clods there may be throughout the depth of tilled soil, the former to be gathered by a horse-rake, and the latter to be reduced by a subsequent operation of the implement.*

* The principle of the revolving cultivator was suggested to the writer by Mr. Joseph Laycock, of Lintz Hall, in the county of Durham, who has already adopted it in combination with a horse-hoe, with the most unqualified success in stirring and pulverizing the soil, and at the same time throwing the weeds severed by the hoe to the surface. The revolving principle was also applied upwards of a year since by Mr. Anthony Hall, of Prudhoe, Northumberland, to a subsoiling implement possessing advantages over any other that has hitherto been invented, and which, with some trifling modifications, will be every thing that can be desired for the purpose.

Of all descriptions, soil of a clayey nature is that in which the use of the revolving cultivator will be attended with the greatest and most important advantage, as may be understood from the observations to follow in suggesting a mode of tillage by means of that implement, which mode of cultivation will render the occupation of clay land farms, especially, much more advantageous, by the saving of both time and labor, than the practice usually pursued.

In describing the mode of tillage referred to, the land is supposed to be previously thorough drained, when the following will be the process to be pursued :—The division of the land, which, according to the course of cropping adopted, falls in course to be fallowed, must be thoroughly and cleanly ploughed in autumn, with furrow-slices so disposed as to expose the greatest possible surface to atmospheric influence. Having ploughed as directed above, the land must remain untouched throughout winter until spring; during which season, and when perfectly dry, it must be repeatedly worked by the revolving implement, so often as any foulness or coarseness may remain. After each working, the land must be gone over with a light harrow, or, what is better, a horse-rake, for the purpose of gathering the weeds. The land by the means just mentioned will be perfectly cleaned and pulverized without being touched by the plough during spring.

In the mode of tillage herein recommended, "Greg's System of Managing Heavy and Wet Lands without Summer Fallow," promulgated during the existence of the Board of Agriculture upwards of thirty-five years since, will not fail to be recognised. Such being the case, it will be unnecessary herein to dilate on the advantages to be derived from the practice of such a system of tillage; and to those who may be desirous to enter into a particular comparison of it, and the usual mode of tillage, it will be sufficient to refer them to Mr. Greg's pamphlet on the subject, or to the Library of Useful Knowledge—"British Husbandry," vol. ii. page 66—in which last-mentioned work, an abstract of, and commentary on Mr. Greg's system will be found. The only additional observation which it appears necessary to make on the subject of the present paper is, that whatever may have been the advantages of the system referred to by means of implements already in use, such advantages will be greatly increased by the use of the revolving cultivator herein treated of; and that the rapidly increasing application of scientific knowledge to the practice of agriculture will banish summer fallowing from every system of husbandry on all descriptions of arable land, and substitute a green vegetable crop as equally conducive to the cleaning of the soil, and which in itself, whilst yielding a profitable return in the production of beef, will also be the means, by raising an abundant supply of farm-yard manure, of the progressive melioration of the soil, and of increasing its power of production of grain.

Wines.—We have not altered our opinion about British grape wine. No doubt you may make a strong, palatable wine simply with grapes, sugar, and more or less water; but it would not be a wine that we should esteem. You will find the following a good receipt for making still grape wine: To 3 pecks of grapes, picked and heaped, put 3 stones of moist sugar, and 9 gallons of water. Bruise your grapes carefully before you mix them with the sugar and water. Put the whole into a large open vessel, and stir them daily for ten days or a fortnight. When the fermentation ceases, pass the whole through a fine sieve and put it into your cask; be sure that it is quite filled; then bung it down and keep it twelve months before you bottle it.—*English Paper.*

THE TRUE AND PROFITABLE MODE OF DIMINISHING THE SURPLUS PRODUCT OF COTTON.—No. 2.

"*Nashville, February* 13, 1849.

"V. K. STEVENSON, ESQ.—DEAR SIR: In answer to your note of this date, asking me to furnish to you (for the use of a friend who desires it) such information as I may possess with regard to the cotton manufactories of this State, I have to remark, that the knowledge which I possess extends only to those establishments situated within the 'middle division' of the State; and even that is too superficial to be entitled to much consideration.

"There are probably now in operation, within the bounds of 'Middle Tennessee,' some twenty different mills for the manufacturing of yarns and cloth. From the best data I have at command, I estimate the number of spindles in operation at not less than 18 or 20,000. There are but few of these mills which as yet are making cloths, though several more, I understand, are preparing to do so. The article manufactured consists chiefly of cotton yarns, varying in sizes from number 3 or 4 to number 13 or 14. Some two or three of them also manufacture a heavy article of wool and cotton goods, used for negro clothing.

"In addition to the mills alluded to, there is now being erected, and very near its completion, another one at Lebanon, 30 miles distant from Nashville, and which, in point of construction and machinery, is believed to be *fully equal to any one in America of its size*—the buildings all being of the best material, and on the most approved plans—fire-proof throughout. The engines for propelling it, as well as its operative machinery, embrace all the latest American and European improvements. The buildings (which are in greater part four stories high) cover an area of very nearly or quite three-fourths of an acre. When finished, it is designed to contain 6000 cotton and 2000 woollen spindles, and 240 looms, capable of producing from seven to eight thousand yards of cloth daily; and as the goods which it is intended to produce will be of the heaviest description, the quantity of cotton which it will require for a year's operation will be about 2500 to 3000 bales, with a proportionate amount of wool. So you will perceive that within a short time there will be in operation in this division of the State, certainly not less than 25,000 spindles; and as these spindles will all be engaged in producing the very heaviest description of yarns, the entire amount of cotton required for them will not be short of 8000 bales.

"In the eastern, and also in the western division of the State, there are many other small mills, of which I know too little to enable me to give to you, for your friend, any information of a character sufficiently reliable to make it valuable to him. I hesitate not, however, to assert that, together, the two other divisions possess not less than 10,000 spindles, and consequently increase the quantity of cotton manufactured annually to not less than 12,000 bales in all—more likely exceeding than falling under this number.

"As to the names of the different mills, their owners, and the post-offices nearest to them, I regret that I am unable to give them to your friend with that degree of accuracy which I would otherwise be pleased to do. The enclosed memorandum will give you all the information I possess at present on this branch of the subject—remarking that I do not submit it to you as being any thing more than a mere approximation to the number of spindles operated in each mill—with, however, the further remark, that I am satisfied that I have not over-estimated them in the aggregate. In great haste, your ob't serv't,

S. D. MORGAN.

"P. S. You will observe that in the list of mills I have included two which are barely beyond the boundary of Tennessee—in North Alabama. I have included them because a large proportion of their manufactures are consumed in this State; and one of them at least is more intimately connected with Tennessee than with Alabama."

We copy the above letter because we desire that the people of other States should see what is now being done in Tennessee, and satisfy themselves why it is that they cannot do the same. South Carolina has food and cotton in abundance, and Virginia has food and wool in abundance, yet both are becoming depopulated because of the absence of that employment for the surplus labor of their men, their women, and their children, their wagons and horses, that would be afforded by mills and furnaces; and both are being impoverished by reason of the waste of labor in the work of transporting the raw material to foreign markets, losing on the road and in those markets the manures that should restore the exhausted lands, enabling them to

increase their products, and thus obtain the means required for the clearing and drainage of their richest lands, that yet remain untouched.

We have taken this letter from the Nashville Union, whose editor urges the extension of manufactures, in an article filled with bitter denunciations of "the infamous, plundering, protective policy," which renders it necessary that the planters of Tennessee should surround themselves with consumers of food and cotton, a measure that would not be required of them, could they only enjoy the blessings of the free trade policy of "the southern democracy," enabling them to "have the world for a market for their agricultural products." Were that the case, he thinks it would be "to the advantage of the south and west to turn their whole attention to the cultivation of their most prolific soil, and to procure such manufactured articles as they might need in exchange for the products of their farms. But Whig politicians," he continues, "step in and prohibit this exchange. They will not let the Tennessee farmer exchange his corn, cotton, and tobacco with the English manufacturer, unless he will consent to pay *a tax* of fifty per cent. for the privilege—this fifty per cent. tax being imposed for the benefit and 'protection' of certain lordly loom-owners of New England."

We are glad to have, on any terms, assistants in the great work of bringing together the plough, the loom, and the anvil, and it especially gratifies us to obtain them from among the men who have heretofore held that the time had not yet arrived for manufactures, nor could it arrive while we possessed so much unoccupied land. What have been the views of this particular journal on this subject, we do not know, but we doubt not it has followed in the wake of the English political economists who have desired to teach us that we were unfitted for manufactures, and must remain so until our population became more dense, while insisting upon precisely that course of action which compels men to scatter themselves throughout the west, there to become producers of food, instead of remaining at the east, there to be consumers of food. The system they advise is in full accordance with the policy pointed out in a letter given in our February No., page 505, showing the importance of promoting the dispersion of the population of the colonies, lest they should become rivals of the English manufacturers.

The editor is apparently of opinion that if the "plundering protective policy" were abandoned, the demand for cotton would grow so rapidly that the people of the south would grow rich. In reply to this we would ask him whether, if it had been abandoned in 1846, hundreds of thousands who are now consumers of food in the Northern and Eastern States, would not at this moment be in the west producing food—whether the price of food would not now be so low that the planter would buy it in preference to raising it—and whether the effect of such a course of operation would not have been to compel the planter to give his attention more exclusively to cotton, filling the world to repletion, and forcing down the price to such a point as would have totally ruined the whole planting interest of the south?

We also ask him to look at the effect upon their interests of the adoption of this "plundering, protective policy," in the tariff of 1842. The number of consumers of food was greatly increased, because iron and cloth were made at home, and the consumption of cotton rose from 300,000 to 600,000 bales in the short period of five years—and it did so rise because the whole people prospered by reason of the demand for labor that had been produced in the east and north, diminishing the necessity for flying to the west and south, and thereby diminishing the competition with the farmer and the planter, to the infinite advantage of all.

He will, however, say that if we had had perfect free trade, we should have obtained our clothing cheaper, and the consumption of cotton would have

been thereby greatly increased. In regard to this, we now ask him to turn to page 470 of the February No. of this journal, and see what was the increased demand for English cottons, made of India and American wool, produced by the substitution of the tariff of '46 for that of '42. Doing so, he will discover that it was, in the first six months of 1848, less than twelve million of yards, being equal to 15,000 bales per annum, and very little more than the amount required to supply the few factories now existing in Tennessee, which consume American wool alone.

The editor of "The Union" will probably, however, regard as incomplete this evidence of the effects of an apparent approach to free trade in the increased demand for cotton, and will continue to maintain that perfect free trade would be attended with different results. We propose, therefore, to give him a sample of the results of freedom of trade so perfect as not to be interfered with in the slightest degree by custom-houses, and in a very small degree indeed by the distance of the producer from the great market which our friend in Tennessee desires to see fully opened for the corn, tobacco, and cotton of his neighbors.

The manufacturers of Ireland, before the union in 1801, were to a certain extent protected against English competition, and much of the cloth and iron consumed in that country was made by men who consumed on the land the products of the land. At the date of the union, her exports to Great Britain amounted to £3,270,350. With the union all protection ceased, and with each succeeding year it became more and more necessary to seek a market abroad for the productions of the earth that could no longer be consumed at home, and the export to Great Britain rose gradually, until in 1825 it reached £7,048,936. But did the power of the people to consume cloth rise with the perpetually increased necessity for exporting the produce and exhausting the land? Let us inquire.

The whole import of cotton into Ireland from all parts of the world, in the twenty years from 1802 to 1821, both inclusive, amounted to 538,542 hundred weights, or about 150,000 bales, being an average of 7,500 bales per annum, and the whole import of cotton yarn, to 19,995,350 pounds, or about a million of pounds per annum, the product of about 4000 bales, making a total of 11,500 bales.* The amount of cloth imported is not given.

In 1825, the year of great expansion everywhere, with an export to Great Britain of agricultural products amounting to almost thirty-five millions of dollars, we find the import of cotton-wool to have been 4,065,930 pounds, and the import of cotton cloth to have been 4,996,885 yards, making in the whole about six millions of pounds, or about 18,000 bales of cotton, in all its forms, required for the supply of almost eight millions of people; being about three-quarters of a pound per head.

In subsequent years, no information can be obtained, owing to changes in the mode of keeping the custom-house accounts; but in a general report on the state of the trade of Ireland, made by a committee whose object would not have been promoted by under-estimates, it is stated that the import of cotton cloth into that kingdom was, in 1835, 14,172,000 yards, being equal to about four millions of pounds of cotton, or half a pound per head. What quantity of cotton-wool, or yarn, was imported at that time, cannot be ascertained, but it is elsewhere shown that some of the largest establishments for manufactures, of a period somewhat earlier, had disappeared, and that the calico printers were in a state of bankruptcy.†

We beg our friend of "The Union" to remark that with all her greatly increased exports, the power of Ireland to be a customer to the cotton

* Ireland before and since the Union, by R. Montgomery Martin, pages 56 to 60. † Ibid.

planters did not grow, and that the whole quantity of cotton cloth imported into the kingdom in the year 1835, for the supply of eight millions of people, required for its production a smaller number of bales of cotton than will be consumed by the few mills now started in Tennessee.

If he desire to trace further the effects of perfect free trade, he may do it in following out the history of Ireland to the present hour. He may see a vast population idle for more than half the time for want of the regular demand for labor that results from diversity of employment. He may see them, when employed, cultivating fields that have been exhausted because of sending from the land all the products of the land, and flying to seek refuge, or to starve, in the cellars of Liverpool or Manchester, leaving behind millions of acres of the richest lands in the world, requiring drainage alone to enable them to support quadruple the present population. He may see them passing gradually from bad to worse, the potato becoming almost the sole food of the people, until at length the potato rot is followed by famine and pestilence, death, and revolution, and if he then desire to trace these events upwards to their great cause, he will find it in the colonial system which he would now fasten on this country.

Ireland is almost exclusively agricultural, and yet she has recently afforded us a large market for food. South Carolina is exclusively agricultural, and yet she imports hay and wheat from the north. Both abound in rich soils untouched, in lime and marl, and iron ore, and in all other of the natural elements of prosperity, and yet both go backward, while all the world advances. We beg our friend of "The Union" to weigh all these facts, and satisfy himself if there is not a hole in his politico-economical theory.

Should he, after full examination of the facts thus far given, have any doubts on the subject, we would ask him to look with us to Canada. That country has perfect free-trade with England, and, as a necessary consequence, she has no manufactures. The consumer and the producer are widely separated. The land is exhausted because nothing of what is yielded by it goes back upon it, and its owner is exhausted by the payment for wagons and horses, ships and seamen, commission merchants, and all others of the numerous genus that live by the profits of transportation and exchange. She imports her cloth and iron, and all others of the numerous articles of manufacture, and the total value consumed by almost two millions of people is only three millions of pounds, or about fifteen millions of dollars. Allowing even one-fifth of this to consist of cotton goods, and taking the average cost of those goods, fine and coarse, at five pence per yard, the quantity would be thirty millions of yards, requiring about seven and a half millions of pounds of cotton, or about 20,000 bales, and giving less than four pounds to each person, and that is, we believe, very far above the truth. The present consumption of this country exceeds 600,000 bales, being three times as much per head, under the "plundering protective system," as in the adjacent provinces under the beautiful one of perfect free trade. Can our friend of the Union account for this? If so, we would be glad to have his explanation.

In conclusion, we would beg him to favour us with a reply to the following questions:

I. Is there not annually wasted in Tennessee, for want of a regular demand for it, more of the labor of men, and women, and children, and wagons, and horses, than would, if properly employed, produce all the cloth and iron consumed in the State?

II. Is there not more labor wasted in the work of transportation and exchange than would pay for it?

III. Is there not more labor wasted in cultivating poor land than would if applied to the rich land now uncleared and undrained, pay for it?

IV. Is there not more manure wasted on the road and in distant markets than would pay for it?

V. Had the tariff of 1828 been adopted as the settled policy of the country, would not the State be now studded with factories and furnaces, filled with men, and women, and children, employed in consuming food while converting cotton into cloth and ore into iron?

VI. Were this now the case, would not the State be twice as rich as she has become under our past variable and uncertain system?

VII. Were the government now to adopt the principle of *perfect free trade*, would it not close every factory in the State?

VIII. Would not that increase the waste of labor and manure, and would not that diminish the value of property throughout the State?

IX. Would not the re-enactment of the tariff of 1842 increase the number of factories and the demand for labor, and would it not enable the planter to save much of the cost of transportation and exchange, to the advantage of all, laborer and landowner, farmer and planter?

X. Would it not increase the home consumption of food and cotton, to the great advantage of all?

HORTICULTURAL.

ALTHOUGH able works dedicated expressly and exclusively to the dissemination of Horticultural knowledge and literature have since come into existence, we have abated none of that anxiety to see the estimation and knowledge of horticulture take deeper root and spread more widely, which we felt when thirty years ago the subject was placed prominently in the title and prospectus of the old American Farmer.

There is, indeed, between Agriculture and Horticulture a kindred so near, that it is not easy to discern the line of separation—of the two pursuits, we would sooner take our chance with a skilful and experienced gardener, to make a good farmer, than the reverse. Our present purpose, however, is only to make sure of preserving the following as a memorable event in the history of the most distinguished Horticultural Society in the Union, with which our memory must fail when it has ceased to preserve agreeable associations:

MASSACHUSETTS HORTICULTURAL SOCIETY.

The first stated meeting of the year, of this society, was held at Horticultural Hall, on Saturday last. Col. Wilder took the chair, and introduced his successor, Samuel Walker, Esq., with the following happy and very appropriate remarks:

Gentlemen of the Massachusetts Horticultural Society:

The duty of introducing my successor, your President elect, devolves on me under very happy auspices. Your suffrages have fallen on a man who is worthy of the office, and well qualified for it—on one who has served the society in various capacities, with fidelity and ability; and whom you now reward with the highest honor in your gift.

Gentlemen, I rejoice with you in this event, and in the prosperous condition of our association—in the friendship and unanimity that prevails among us, and especially in an opportunity, before taking final leave of the chair, to thank you once more, most sincerely, for the distinction which you have bestowed on me—a distinction for which, at my first election, I had not presumed to hope, but which, having been so often conferred, and by those whose approbation I highly appreciate, I shall ever regard as above any earthly preferment.

During my administration, it has been my desire and endeavor to discharge the duties of my office with impartiality, and with a view to the best

interests of the society. How well I have succeeded, I leave for others to judge; but whatever success may have attended these efforts, for you, my official associates, with whom I have had such long and pleasant intercourse, and from whom I have received uniform and cordial support, I shall ever entertain an affection next to that for family and home.

Gentlemen, may a kind Providence bless you, in your persons, in your families, and in all your laudable efforts to extend the usefulness, and to increase the resources of this institution; and may he who is now to occupy this chair, prove more worthy of the confidence and respect you have so liberally bestowed on me.

Mr. Walker replied in the following very appropriate address:

Gentlemen of the Society:—The very kind manner in which my friend, Col. Wilder, has introduced me, and his determination, if it were possible, to lay me under further obligations by his courtesy, and his avowed approbation of my past services, happily, afford me an opportunity to state how much I value his friendship—the pleasure it has given me to serve the society under his administration, and to tender to you, gentlemen, my thanks for the honor you have conferred upon me.

I cannot plead that I am ignorant of the duties or the responsibilities of the office to which you have elected me, but, in the same spirit of frankness permit me to say, that I have many misgivings as to my ability to discharge them in such a manner as may be acceptable to you, gentlemen, or that I should be able, in any way, to aid or promote the progress and prosperity of the society.

When I turn to the records of the society, to read the doings, and remember the talents of those who have heretofore occupied this chair, and more particularly the eminent practical services of my immediate predecessor, I have good reason for fear as regards my own services. But, with you, gentlemen, I have been accustomed to labor; it is therefore almost unnecessary for me to say, that for the future I shall hope and expect to receive the same indulgence you have so often and so kindly extended to me, during a period of nearly twenty years. With these expectations I enter upon the duties assigned to me, with a determination on my part, to co-operate with you in as liberal an administration of the society as may be consistent with strict economy and its future interest.

I shall take an early opportunity to submit for your consideration and action, an outline of such measures as shall appear to me calculated to promote the further consolidation and usefulness of the society.

United as we now are as members, still encouraged by the co-operation of friends, and enjoying the liberal benefactions of our honored donors, I trust our future will be full of usefulness, and that our efforts may advance the object for which we are associated.

Gentlemen—when the time shall arrive that these new relations, which are formed to-day, shall be dissolved, may it find us the same united and prosperous society—strong in mutual friendship and esteem.

The meeting was then organized by the appointment of Rev. Daniel Leach as Secretary *pro tem.*

Hon. B. V. French, Vice President, presented the following resolutions, which were unanimously adopted:

Whereas, Marshall P. Wilder, Esq., has, during a period of eight years, discharged the duties of President of this society, to the satisfaction of its members; and

Whereas, Mr. Wilder's administration has been marked with energy and zeal in disseminating horticultural science; and

Whereas, We believe the interest of the society has been greatly advanced by his services, and its influences extended by his practical skill, and the many specimens exhibited by him from his garden and conservatory, of almost all the varieties of fruits and flowers; and

Whereas, We also fully believe that the public, as well as the members of this society, are indebted to him for his practical and successful labors; therefore,

Voted, That the thanks of this society be tendered to Marshall P. Wilder, Esq., for his services during the period he was president thereof; and also,

Voted, That a committee of three be appointed by the chair, to purchase a piece of plate, not exceeding in value ONE HUNDRED AND FIFTY DOLLARS, and cause a suitable inscription to be placed thereon, and to present the same, with the above vote of thanks, to Mr. Wilder, in behalf of the society, as a tribute of the regard and esteem of its members.

Messrs. B. V. French, C. Newhall, and J. S. Cabot, were appointed this committee.

Mr. C. M. Hovey presented the following vote, which was unanimously adopted:

Voted, That the society's gold medal be presented to Gen. H. A. S. Dearborn, the first president of this society, for the essential services he rendered to the science of horticulture and the interest of the society, during the period he presided over its affairs; and that a committee of three be appointed by the chair to carry out the above vote.

The chair appointed Messrs. C. M. Hover, C. Newhall, and E. M. Richards, as the committee.

The following resolutions were presented by Dr. E. Wright, which were unanimously adopted:

Resolved, That this society hold in high estimation the eminent attainments of James E. Teschemacher, Esq., in the various departments of literature and science.

Resolved, That the thanks of this society be tendered to Mr. Teschemacher for his valuable services as corresponding secretary for many years, and as chairman of the committee of publication.

Resolved, That as a token of approbation and respect, and in consideration of these services, that a piece of silver plate, *of the value of fifty dollars*, be presented to Mr. Teschemacher; or such other article of like value, as he may please to designate.

Resolved, That a committee of three be appointed by the chair to carry these resolutions into effect.

Messrs. Wight, Stickney, and Dutton, were appointed this committee.

A committee of arrangements for the annual exhibition was elected, consisting of the following gentlemen:—Joseph Breck, chairman, F. W. Macondry, D. Haggerston, A. D. Williams, Jr., J. S. Cabot, Otis Johnson, P. B. Hovey, Jr., E. Wight, J. F. Allen, Josiah Lovett, Capt. Austin, A. D. Weld, H. W. Dutton.

After transacting other business, the meeting adjourned for two weeks.

Large Poultry.—At a show held in England under the direction of the late Earl Spencer, the following were the dressed weights of some of the poultry exhibited: the best turkey weighed 20 lbs. 4 oz.; capon, 7 lbs. 14½ oz.; goose, 18 lbs. 2½ oz.; couple of ducks, 15 lbs. 10 oz.

MANUFACTURE OF COTTON GOODS AT THE SOUTH.

[From the Augusta (Geo.) Chronicle, March 9.]

"We chronicled a few days since, that the Augusta Manufacturing Company had increased its capital from $160,000 to $200,000, by the unanimous vote of the stockholders. Having many applications for their stock, and being allowed by their charter to increase their capital to $500,000, the board have recently decided to open new books, and receive subscriptions to the amount of $160,000, with a view to build a new mill by the side of the one now in operation.

"A fair share of the stock in this new establishment is now open to the public, for the benefit of such as desire to invest money in a sure and profitable business. No subscription will be called in, or payment asked, till the whole sum is subscribed.

"The new factory will reap the advantage of all that the company has learned by experience in building a pioneer mill; so that every dollar will be turned to the best possible account. One general superintendent, and one salesman, office, &c., will answer for both factories. This, of itself, will be quite a saving in the contingent expenses.

"The present mill is turning out 32,000 yards of cloth a week, which will soon be increased to 50,000. The demand for these goods greatly exceeds the supply. Each loom gives a product of forty yards a day. There is a full supply of worthy females, and of males, who seek employment at this important mechanical pursuit. Their wages are good and satisfactory. *All classes are beginning to appreciate the wisdom of bringing the loom and the spindle to the cotton, the bread, and the meat;* all see the folly of being at the useless and the enormous expense of carrying Georgia cotton, breadstuffs and provisions, to Old or New England, to be wrought into common goods, for Georgia consumption.

"Georgians can do their own carding, spinning, and weaving. They will soon make their own shoes and boots, saddles and harness, and tan more leather than they wear out. Nor shall we stop at the point which will barely meet the home demand for manufactured articles. Already a gentleman of wealth from another State, who made his money in a cotton mill, is taking preliminary steps to erect one in this city, with a view to spin yarn for export. As there is no lack of water power, no want of laborers and raw material, we may reasonably expect that capitalists will not overlook so promising an opportunity for making money. The processes for picking, carding, spinning and weaving our great staple, are among the most simple in the whole range of the mechanical arts. Falling water propels all the machinery; children tend it. Whatever capital, skill, and industry can do in the way of manufactures, the citizens of Augusta are bound to accomplish."

From every portion of the south and west we have indications of a growing determination to make a market on the land for the products of the land, and we rejoice in the belief that the day is not now far distant when the agriculturists of the land, throughout its whole length and breadth, will unite with us in the assertion that protection is a farmers' and planters' measure. It may, however, be asked, "Why should they desire protection, if they can even now obtain the results given above?" By way of answer, we would ask, "To what do they owe the existence of these mills?" Did they build such under the free trade system of '41, when our whole consumption was under 300,000 bales? They did not, nor could they now build them, but that the tariff of that year gave to the farmers and planters that protection which was essential to the promotion of concentration, without which mills and furnaces cannot be built. In the few years that have since elapsed, the consumption has doubled, and the more mills we build, the faster grows the power of consumption.

It will be said, however, that this is being done under the tariff of '46, which is less protective than that of '42. Granted—but it is far more protective than that which existed in '41 and '42, at the close of the compromise system. The country enjoyed four years of protection, during which it grew in wealth and strength, and at the close of those years, although a reduction was made, it did not go back to the system which had produced the disastrous effects that were witnessed in '42. The feeling of the

necessity for protection had grown, and even the ultra free trade secretary did not venture to go below 30 per cent.

The people of the south *can* manufacture coarse cloths more cheaply than those of the north, and therefore those of the north must turn their attention to finer ones, and the more rapid the progress of the south in the production of the one, the more rapid will be the increase in their power to consume the other. There is, therefore, an abundant field for the people of the north, who will thus profit by all improvements at the south; but to enable them so to do, adequate protection is essential. It is not to the interest of the south that those who are now making coarse cloths in Lowell should be compelled to fly to the west, because such a course of action would tend to increase the supply, and diminish the prices, of all agricultural products, and to diminish the power to consume cotton and wool. Every man retained in the factories of Lowell, or in the furnaces of Pennsylvania, is a customer of the farmer and planter, and every man driven from them to seek the west must of necessity become a rival. Wherever men are enabled to combine their exertions, their labor becomes more productive, and they become larger consumers. Wherever they are forced to fly from each other, their labor becomes less productive, and they become smaller consumers. The power of this country to consume food and cotton was never smaller than in 1841 and '42, the period of the nearest approach to perfect free trade, and never greater than in 1846, the period of the most perfect protection.

ON STONE FENCES.

Peter Minor, of Virginia, was a man of rare modesty, and of very rare merit, both in his disposition and his example—in his pursuit of useful knowledge, and in his perspicuous manner of imparting, unreservedly, what he knew for the benefit of others.

On the 1st of October, 1819, a paper was read from him to the Albemarle Agricultural Society, on the subject of *Stone Fences*. He maintained that the cost of keeping up timber fences, would, in thirty-three years, amount to more than the worth of the land, supposing it to be worth $20 an acre. The view he presented was this:—

An inquiry naturally presents itself on this subject:—What is the relative value of a farm fenced with stone, compared with one fenced with dead timber? Take the following data.

From the best accounts I have been able to obtain from others, and from my own experience, it may be fairly stated that one full month of the whole annual labor of every farm is consumed in the various operations of cutting, mauling, hauling, and putting up fences. This is one-twelfth of the year, or one complete year in twelve, that is devoted exclusively to making and repairing dead fences; and as the expense is annual, it is clear that the condition of such fences is no better at the end of any year than at the beginning. Again—I think it may be fairly stated, that when the materials are in place, the expense of erecting a stone fence does not exceed that of erecting one of rails, including the various operations above-mentioned. The value of the timber (which is not taken into the account above) and the advantages of having the land cleared of stone, will balance the expense of moving the stone three or four hundred yards. So that on a farm abounding with stone, and where the transportation does not exceed this distance, I think a fence of stone will in the first instance be as cheap as a rail one. Suppose, then, two farms of 500 acres of arable land each, in all other respects equal, except that one is fenced with stone, and the other with dead timber. Each of them employs twelve laborers at $100 a piece per annum. One is at no expense, while he who fences with timber consumes one month in every year, in making and repairing his fences. This is an expense of $100, being the labor of one

hand during a complete year. At annual compound interest, this would amount in less than 33 years, to $10,000, which is the entire price of the land, supposing the farm to be worth $20 per acre. Thus in 33 years, the one farm would be able to buy the other, from the expense saved by the different mode of fencing. It is true there are not many farms capable of being entirely fenced with stone, but there are scarcely any that do not admit of it in some degree, and the advantages would be derived in a similar ratio to any part which could be thus enclosed. P. MINOR.

PAPER-MILLS OF THE SOUTH.

[From the Mobile Herald, March 7.]

"THE Tuscaloosa paper-mill has finally got into operation. We mentioned the receipt, the other day, of a sample of wrapping paper, the first product of the mill, and a very excellent specimen it was. The last Tuscaloosa Observer contains an extended notice of this new enterprise. The editor and citizens generally, male and female, were present at the first start of the machinery, and witnessed with deep interest the process of converting the unsightly mass of pulp into even and consistent sheets of wrapping-paper. In a short time the manufacture of printing-paper for books, newspapers, &c., will be commenced. We predict full and complete success for the company, and we doubt not all the publishers in the southern and middle portions of the state will procure their supplies from the Tuscaloosa mill. We promise them our patronage—at least till our mill gets into operation; that is if they will furnish us with a passable article. There will, however, be no difficulty in making paper every way equal to that sent to us from the North. The water of the Warrior is as bright and pure as northern streams, and the raw material, in a much better condition than that used at a distance, can be procured in abundance on the spot.

"It has been clearly demonstrated that we can undersell the northern manufacturers of coarse cotton goods. There is one case in point. The Virginia, Georgia, and Alabama osnaburgs have entirely driven out of this and the New Orleans market the similar fabrics heretofore supplied by Lowell. So it will be in the manufacture of paper. We can erect mills at less expense, procure the raw material more cheaply and in better order, and although labor may be higher, these and other advantages will enable our Tuscaloosa friends and others who may engage in the business, to furnish all kinds of paper on as favorable terms as the northern and eastern mills. Indeed, we feel confident that in a few years Alabama printing paper will be exclusively used in many of the West Indian, Mexican, and South American printing-offices.

"It will not be out of place to mention here that a gentleman of this city is arranging to erect a paper-mill in our immediate vicinity. Success, we are sure, will follow. Some may doubt the practicability of such an enterprise, especially as a similar one failed in New Orleans. In the neighborhood of Mobile is a number of never-failing, bold running streams, as clear as crystal. In New Orleans the Mississippi water was found to contain rather too much earthy matter, and hence the failure."

Alabama has rags in abundance, but they are almost valueless because of the want of a home demand. She wastes far more of them annually than would suffice to produce all the paper she consumes. She wastes more food than would feed all the people employed in converting all the rags into paper, and more labor than would pay for all the cloth, and paper, and iron. If this is so, and all who doubt may satisfy themselves that so it is, the paper thus produced will be all pure gain, and will add to the power of consuming commodities of a superior order. Every increase in the circulation of newspapers, consequent upon the diminished price, will produce a demand for more school-books, and Bibles, and Testaments, and every increase in the consumption of school-books will produce a demand for more books of higher character. With every step in the progress of concentration, men will be enabled to read more and better books, and to have more and better schools, and thus will intellectual, and moral, keep pace with physical improvement. Let every man, then, unite with his neighbor man in the determination that the loom and the anvil *shall* come and take their places by the side of the plough and the harrow.

WOOL AND SHEEP HUSBANDRY.

In early numbers of this journal, we evinced the sensibility that is felt in regard to the great importance of *sheep husbandry* in the United States, both as a *provision* staple, and as an element of one of the most important manufactures. We hold it to be the grossest neglect of a great resource of national wealth, that we should be importers either of *wool or of cloth*—a blind surrender of a great interest to an absurd abstraction popularly called "free trade." No! let the American who wears the cloth be proud to say that its woof and its warp are the produce of *American flocks*. Let the man who weaves the cloth get *American wages and eat American flour and mutton*. Let the loom in which it is woven be brought as close to the wool as possible, instead of sending the wool to Leeds and Manchester, in England, to be woven by men, women, and children, who are forced to labor sixteen hours a day *to keep soul and body together!* It is not against such people and such misgovernment that free-born Americans should be *forced* to contend by the policy of their own government, in obedience to old '98 notions about "free trade!"

Our object will be to keep the public advised in relation to our capacity to *rely on ourselves* for all the materials and all the art that are essential to a self-supply of every woollen fabric of every description.

If, as a nation, we put our foot down and say, we WILL *manufacture for ourselves*, the consequence will be, as in all other similar cases, capital, assured of a steady market, will go into that channel; and after a little the farmer will get his cloths cheaper than he now gets them from abroad; but not if we open our custom-houses to every bankrupt concern in Europe, who, whenever a revulsion occurs in England, will flood our markets with his goods, *at his own valuation*. The following letter is from one of the best informed men in the Union on the whole subject:—

SHEEP HUSBANDRY IN VIRGINIA.

To the Editor of the Agricultural Department of "McMakin's Model American Courier:"

Weehaw, near Summit Point, Jefferson County, Va., March 6, 1849.

SIR:—Enclosed is a copy of the last shearing of the flock of Richard K. Meade, deceased, late of the county of Clarke, (then Frederick,) Va. It has been my intention, for some time past, to forward to you this paper. I can testify to its correctness; as, with the assistance of a friend, and in the presence of a numerous assemblage of gentlemen, I weighed most of the fleeces. I particularly remember weighing the fleeces 16½ and 16 lbs; 32½ lbs. of wool of quality, I suppose, equal to ¾ or ⅞ merino. These fleeces were clipped from two bucks about sixteen months old.

If you feel disposed to lay these facts before the agricultural world, they are at your service. Before I close my letter, allow me to ask if you can inform me where the shepherd's dog or mastiff can be procured; as the curs are committing sad havoc upon the flocks of our neighborhood.

If these dogs (puppies of the stock, I mean) can be procured, you will very much oblige me by letting me hear from you.

I am, Sir, very respectfully, your obedient servant,

J. F. NELSON.

Note by the Editor.—The facts are indeed highly interesting on various accounts, and on two particularly. They demonstrate, in the first place, what valuable results may be accomplished by giving the force of a clear and determined mind to the attainment of improvements in any particular branch of agriculture, as Mr. Meade did his to that of *wool and sheep husbandry*—and then these facts demonstrate what, however, really needed no demonstration, that the climate and soil of Virginia is *well* adapted to the highest development of that animal for all its useful purposes. The fact is, that if the Old Dominion would review the past, see to what condition her abstractions have reduced her, and take a new departure, sheep husbandry in all its agricultural and manufacturing relations and capabilities ought to be among her most productive sources of wealth. She ought not to

send a pound of wool beyond her own borders, nor a dollar out of the State for the purchase of clothing of any sort, or of iron in any form.

As to shepherds' dogs, we do not know where they are to be had. We have been long expecting some from France. But it may here be mentioned as a fact, lately derived from Mr. Gray, who learned it by personal observation, in Mexico, that there they make the best sheep dogs in the world, by taking a pup of any good large breed when whelped, and putting it to be suckled and brought up by a *ewe*. Mutual attachment grows up between him and the flock, while he obtains the mastery, which he exercises for their protection and safety. The trial may be easily made. We have no doubt of the fact.

We here condense the statement of the *weights* of Mr. Meade's fleeces:—

Seven year-old rams, averaged $13\frac{9}{16}$ lbs.; 2 two year old, 9 lbs.; 2 two year old wethers, $9\frac{3}{4}$ lbs.; 8 one year old wethers, $9\frac{1}{4}$ lbs.; 10 yearling wethers, $9\frac{1}{2}$ lbs.; 14 ewes averaged $6\frac{5}{7}$ lbs.; 21 ewes, $6\frac{1}{2}$ lbs. Summary.—Average of 29 rams, wethers, and yearling ewes, was $10\frac{6}{16}$ lbs.; ditto of 35 ewes was $6\frac{11}{16}$ lbs.

Have these weights been equalled by any other flock in the United States?

THE WOOL MARKET.

Cortland Village, March 5, 1849.

My Dear Sir:—The wool market of the United States has labored under a depression for the past year, for reasons obvious to every observer. The financial crash in France, and the tightness of the money market in some other European countries, compelled their manufacturers to throw their woollens into the market at all events, and they sold at ruinous sacrifices—often, it is said, for less than the first cost of the wool. Immense quantities of foreign cloths were thus disposed of in this country. Here, as in Europe, their price was below what any manufacturer could afford to sell them at. They threw down the prices of American cloths, and the manufacturer could not pay former prices for wool, with this injurious competition.

How long are these causes to operate? I believed from the beginning that they could not exceed two years, and from present appearances, wool will nearly or quite regain the prices of 1847, during the coming spring. It is not impossible—it *may* even rise considerably above those prices. The demand for it now is far more active than last spring, and the prices better.

There are many reasons why wool should soon rise higher than it has been for several years. When the surplus cloths of Europe, in the hands of the manufacturers last spring, shall have become exhausted—shall cease to glut our market—this rise will, I think, take place. The French and German manufacturers have suffered too severely by the monetary and other disasters of the past season, to get any surplus of cloths on hand for the American market. I have no statistics on the point, but such *must* be the fact. Indeed, there is ground for a reasonable doubt whether they will meet their own home demand! Does any one say, "Then the raw material of this surplus, hitherto worked up in Europe, will come here, and have the same effect with the manufactured woollens, on the *wool grower?*" With freight and duty added to the original cost, *fine* foreign wools cannot now be sold here short of a good round price. Besides, the storm which has broken on the European manufacturer has fallen with equal violence on the wool grower. Hostile armies are ravaging the fields, and doubtless breaking up, scattering, and subsisting on the flocks of the most important wool-growing region of Europe—Hungary. If a general war should break out in Europe, (which God avert!) we shall, beyond all doubt, have to supply Europe with a considerable portion of her woollens! In addition to the probable diminution of the staple in Austria, (and more particularly Hungary,) the accounts from Australia, (which furnished England most of her fine wool,) are not, so far as I learn, very favorable for the incoming crop of wool. It is said that

the past season has been an unfavorable one for sheep in that singularly precarious climate for them.

Thus you see that all looks bright for the American wool grower. The people of this and some other of the Northern States, encouraged by the remarkable price borne of late by dairy products, and discouraged, *as usual*, by a few months' depression in wool, have still further sacrificed their flocks, and it is difficult to say where our manufacturers are to obtain their fine wools in a short period. That the home supply has *never* equalled the demand, *you* are perfectly aware, notwithstanding the common impression to the contrary.

Such are my views on the subjects embraced in your inquiries.

I am, dear sir, very truly yours, in great haste, HENRY S. RANDALL.

J. S. SKINNER, Esq.

WHO PAYS ENGLISH TAXES?

Is any portion assessed on the Wabash corn-grower, who, after expending seventy-five cents on every bushel he sends to Liverpool, is there subjected to every species of imposition from foreign factors without the power of redress? What toll does he pay in the commercial mill in which he allows his corn to be ground? He may think himself well off if he gets back one peck out of the four.

Does the Michigan wheat-grower ever think of the amount he pays in "dock and town dues" to the Liverpool corporation dinners?

And what does the Kentucky grazier lose by not having a home market? Here is a *bonâ fide* account of sales of 366 tierces of beef shipped to Liverpool by one of our Louisville houses, who are familiar with the business, and who have every facility of doing it on the cheapest terms:—

Cash for 366 tierces beef, due by average, March 16, 1848, net					£1769	12 2
CHARGES.						
Warehousing entry	£0	6	0			
Freight from New York, (and *not* including freight and charges to New York)	153	14	4			
Insurance and policy	23	7	3			
Landing, wharfage, housing, and delivering	15	5	0			
Washing, capping, and re-pickling	50	5	0			
Washing, and opening to show	2	18	0			
Rent, £11 8 3; fire insurance £4 6 3	15	14	6			
Bill stamps, 18*s.* 6*d.*; Incidentals, 5*s.*	1	3	6			
Interest on freight	3	18	10			
Brokerage, 1 per cent	17	15	5			
Commission, 4 per cent	79	15	8	355	3	6
Net proceeds				£1414	8	8

At this point the beef is "*in bond*," and before it can be released from bondage it must pay part of the pension of "The Iron Duke."

If the beef spoils on the voyage, does the intended consumer pay any part of the loss? And if the consignee finds it convenient to fail, will the Fayette consignor oppose the discharge of his debtor under the English bankrupt laws?

Does not the Western buyer of Sheffield cutlery pay a part of the Hallamshire poor rates? And do not we all who eat on Staffordshire plates pay a proportion of the cost of English bayonets in Ireland?

We have no intention of preaching a crusade against foreign commerce, and have no desire to be isolated from the rest of the world. We do not call on the government to offer such a bounty on the growth of June apples in Kentucky as would make their cultivation in green-houses a profitable business, but we do desire to see the consumer of our corn and beef drawn nearer the producer, instead of paying or losing the expenses of transportation, which fall on us when the supply of our produce is greater than the demand. We would invite the hands to come here and work up our own iron and temper our own clay.

CORN.—Some days since we gave the results of a shipment of beef from this country to England. We now annex a copy of an account of sales of 1800 bags of Indian corn shipped to and sold at Liverpool on account of the New Orleans agents of one of our Louisville houses:—

By sales of 457 135–480 qrs.	£649	14	8		
1800 empty bags, at 2¼*d.*	16	17	6	—666	12 2
To freight from New Orleans	367	3	2		
Primage	18	7	2		
Dock, town, and trade dues	6	13	8		
Cartage, porterage, and rent	48	5	2		
Fire Insurance	1	11	6		
Postages and interest on charges	5	1	9		
Brokerage	3	4	7		
Bank commission	1	13	4		
Commission and guarantee, 3½ pc.	23	6	7	—475	6 11
Net proceeds, cash, Nov. 26, 1847				£191	5 3

E.E. Liverpool. R—— & B——.

Proceeds equal to				$929 86
Including 9½ per cent. exchange.				
Now add cost of 1800 sacks at	0	14		
Transportation to New Orleans		30		
Shelling, sacking, and drayages		7		
Commissions and charges at New Orleans		3		
Weighing		2		
1800 × 56 =				1008 00
Net proceeds here on the wrong side, or a net loss of				$78 14

What say you, gentlemen corn-growers of the West? Will you risk the Liverpool market? Is it policy to exchange your products for the wares of Manchester, Birmingham, and Sheffield?

Free trade means that you are free to send your corn and wheat where there are "dock, town, and trade dues," and on "English bottoms;" and this year you can have the advantages of the "sliding scale." These Liverpool factors, with their commissions, and charges, and interest on charges, must grow fat on your corn. Do you think they would subscribe liberally when you would put up a new school-house, or build a bridge, or pay your preacher?—*Louisville Journal.*

Ah! but without these enormous taxes on every thing in England—taxes on knowledge and on the light of heaven itself—on newspapers and on window-glass, (what is it that is not taxed?) how could the people be made to pay to the Archbishop of Canterbury, John Bird Sumner, $85,000 a year; to the Bishop of London, $55,000; to him of Winchester, $50,000; to the Archbishop of York, $50,000, and so on?—*Editors P. L. & A.*

STRICTURES ON DR. BALDWIN'S NEW THEORY.

(POSTPONED FROM LAST NUMBER.)

MESSRS. EDITORS:—With due deference to the superior capacity and attainments of your valued correspondent, Dr. Baldwin, we propose to make a few remarks in regard to his "New Inductions in Agriculture," that appeared in the last number of "The Plough, the Loom, and the Anvil."

They are made with no desire to criticise—no wish to engage in a controversy; neither from any presumed qualification on our part, of competency to enter into a rigid analysis of the opinions he advances; but are offered simply as some reflections that were suggested by a perusal of his interesting, and, in our humble opinion, very valuable article, notwithstanding we differ materially from him in many points, and if it were pardonable to introduce political phraseology in an agricultural dissertation, we would say that we consider him decidedly '*ultra*' in his views.

The first deduction seems to be rather indefinite, but the evident design of it is to convey the impression that vegetables are NOT dependent upon the atmosphere for their nourishment, for he says, "No plant can exist in an impoverished soil without manure at the root."

In a subsequent assertion he states that "no manure can be made of *any substance* without the aid of the putrefactive process." If this be true, all manures owe their origin *exclusively* to organic matter, for it would be absurd to speak of inorganic matter as undergoing putrefaction, the terms disintegration and decomposition being applied to changes in their form and composition.*

Therefore manure could not have existed previous to the creation of organic matter, and as plants, according to his assertion, are doomed to instantaneous death when deprived of it, we would ask what sustained vegetable vitality when it first made its appearance on earth?

From the induction of Dr. Baldwin we must infer that it would have perished, and this sphere would have rolled on in its circuitous orbit *ad infinitum;* but its beautiful robe of verdure would never have embraced it—the science and art of culture would have been unknown, and in fact animal creation could not have existed, for it is dependent for its support upon vegetation, that being the great and important agent that is intrusted with the exalted function of transforming the raw material into nutritive compounds.

But this is not the only dilemma we find ourselves in, for if we admit that plants *do not* draw largely upon the carbonic acid gas of the atmosphere for their carbon, how can we explain the origin of the immense deposits of coal that are found diffused over both continents, and also those extensive accumulations of peat, that are often many miles in length, and feet in thickness? If we were wafted upon the wings of imagination through an infinite number of years long past, and could gaze upon one of those valleys that is now the receptacle of mountain masses of peat, and behold it when its primitive verdure luxuriantly waved throughout its entire extent, and then watch it each succeeding year, and see the annual product fall down, decay, and add to the amount of organic matter—thus continually accumulating, until a mighty volume of carbon is congregated together; think you

* The French chemists do not admit that inorganic matters are manures—they term them *ameliorators.—Editors P. L. & A.*

that we would then assert that plants *do not* draw nutriment largely from the atmosphere?

These, and many other circumstances, confirm *us* in the opinion of numerous individuals, that plants receive a large amount of their support from other sources than the soil. In fact, if they did not consume the carbon of the carbonic acid formed by combustion, the natural decay of organic matter, and the respiration of animals, the atmosphere would eventually become surcharged with it, when the earth would be uninhabitable.

That plants *do* absorb carbonic acid is not only a plausible conjecture, but an *established fact*, and reveals the beautiful connection and mutual dependence of the animal and vegetable kingdoms upon each other.

The doctor is of the opinion that the analytical investigations of learned chemists are not only valueless, but that they have proved decidedly injurious to the best interests of agriculture.

Now we would ask if he denies the accuracy of those analyses, and if so, we would class him among those skeptical ones who still doubt the rotundity of the earth, and would at once omit any further remarks. But that they are rigidly correct cannot be denied, for they have been repeatedly verified. Presuming that he admits they *are* reliable, we will next refer to the 3d clause, in which he asserts that "it is *not* true that different vegetable matters during their growth, extract different fertilizing salts from the earth." And in proof he says, "for lands exhausted by continued cultivation in one kind of grain will not produce a more remunerative crop of *any other kind*." In this he does not say directly that plants absorb the inorganic constituents in *different* proportions, but it amounts to the same thing, and the proof he offers, if correct, equally sustains both. If we admit that they all absorb the same elements, yet in very *unlike* quantities, it would be in direct opposition to the last sentence quoted, therefore his meaning is clear.

Now, according to the analyses referred to, plants *do possess* these elements in *very different* proportions. For example, let us compare the inorganic constituents of the oat with that of the potato, and we find a wide difference, the latter containing by far a larger quantity of potash and soda, while the silica is much more abundant in the first.

A multiplicity of such comparisons might be made, all tending to establish the same important fact, that plants *do absorb the inorganic elements in very different proportions.*

Here then is a collision, and the sweeping assertion of Dr. Baldwin must either be erroneous, or the results obtained by Liebig, Berzelius, Sprengel, Mulder, Prout, and a host of other scientific investigators, must be incorrect and unreliable. But his assertion not only conflicts with the settled principles of science, but also with the views, as we had supposed, of all thorough agriculturists, and, if true, will do away with the necessity of a rotation of crops, which we had thought was acknowledged by both theoretical and practical men to constitute the basis of an enlightened system of agriculture. Now if it can be maintained that no advantage is derived from an alternation of crops, (and it certainly can, if it can be demonstrated that different plants absorb the same inorganic elements in precisely the same proportion,) it will not only detract from the utility of scientific research, but will also destroy all confidence in the "careful observation of the operations of nature, and the inductive reasonings drawn therefrom;" for all the experiments that we have ever heard, tend *emphatically* to establish the principle that a judicious rotation is indispensable to good husbandry.

Again, he places very great stress upon the efficacy of shade, regarding it as the great fertilizing agent, for that alone "is capable of developing the fertilizing principle that exists in every particle of earth as naturally con-

stituted." And in proof of this position, he says, "the difference in the fertility of the soil in our native forest lands arises *solely* from the circumstance of the surface-soil being more or less densely shaded." Here he appears to regard the organic matter, which is known to exist in very variable proportions in all virgin soils, as of *no value* whatever to vegetation, for the difference in their fertility is *not dependent* upon its presence or absence, but *solely* upon the intensity of shade; and if decomposed organic matter does not exert the slightest influence on plants in this case, we are unable to see why it can in any other, and his deduction, in our humble opinion, is equivalent to a promulgation to farmers of the doctrine that the refuse matter of their barn-yards could as profitably be scattered in the highways as on their fields, (unless it have the effect to shade it to some extent,) which is certainly a novel idea. This appears also to be at variance with the last clause of assertion No. 6, that we have already quoted, for there he states that ALL manure is the result of putrefaction, which term we have already remarked is applied exclusively to the decomposition of organic matter.

Now, if "shade is the great fertilizing agent, and in this consists the perfection of agriculture," it is all-important that it be clearly demonstrated. If it be so, we would ask why it is that a field that has produced a luxuriant crop of any kind of grain is not greatly enriched by it, for it must have been very much shaded? But instead of being improved, science, and so will the practical experience of every farmer, answer, that the reverse is the case.

We regret that Dr. Baldwin did not give his reasons for the opinions he advances, and frankly acknowledge that these remarks are made more for the purpose of eliciting information from him than imparting it to others. Feeling deeply interested in the welfare of agriculture, which is the leading pursuit of our country, we are desirous of having every thing that will promote it fully sustained; and if agricultural writers would give with their abstract principles, the reasons of their adoption, a great favor would be conferred, and the necessity of all articles like the present avoided.

In conclusion, we would remark that we differ essentially from all those who underrate the labors of scientific men, and instead of considering that they have been and are detrimental to the interests of terraculture, we think they have done more to elevate the noble calling, and bring it into its proper and exalted estimation, than any other class, and have made many valuable suggestions. Still we would not recommend that the dictations of science, which is but yet in its infancy, where they are at variance with repeated and multiplied experiments, should be adopted; but such instances are NOT numerous, and for the most part, there is an admirable coincidence between them—one confirming the other.

But in what manner has science elevated and advanced agriculture? It has suggested many improvements of great pecuniary value, such as the application of sulphuric acid to bones, the giving of alkalies to hoven cattle, and ultimately, the analysis of soils will be an object of paramount importance, and will precede every attempt at renovation; but besides this, it has diffused a flood of light upon the subject, that enables culturists to experiment with clearness, and the promise of success.

Some men estimate its value exclusively by the dollars and cents that they receive directly from its hands; but in our opinion the greatest public benefits are not to be counted in coin, though they will eventually and indirectly greatly increase national wealth.

Yours, respectfully, P.

Germantown, Pa.

DIRECTIONS FOR CUTTING AND WHITENING STRAW,

FOR HATS, BONNETS, ETC.

Cut rye near the ground, when the grain is in the milk; tie it in small bundles, cut off the heads, dip it in boiling water, (if you cannot dip it, pour boiling water over it, though dipping is best,) dry it in the sun thoroughly, taking it in at night, so that no dew falls upon it. Cut out that part under the husk, and tie it in small bundles, to make fine braid for nice bonnets; for coarse hats, the whole length between the joints may be taken and braided without further preparation.

To Bleach or Whiten Straw.—Take a barrel with one head out, take the bundles of straw you have cut, and wet them thoroughly with hot soap-suds, tie them in the barrel as near the head that remains in, as you can. Dig a hole in the ground, a few inches deep, a little larger than the barrel; put some ashes in the middle of the hole. Heat some iron vessel, put some coals upon the ashes, and put the hot iron vessel upon the coals, and put in two ounces of sulphur (or brimstone) for every pound of straw. Set the open end of the barrel over it, and heap up some dirt around it to make it tight; let it remain all night. If it is not as white as you want it, repeat the operation, taking care to wet the straw every time you smoke it, or the smoke will do no good.

Old hats or bonnets may be whitened in the same way, if thoroughly washed with a brush or sponge and soap-suds.

Straw must always be wet when it is braided, to prevent its breaking. Ingenious persons may learn to braid by taking a piece of an old hat or bonnet—which can be readily procured at the bonnet-maker's or milliner's—and picking it open, soaking it in water, to prevent its breaking.

REMARKABLE PRODUCTIONS OF A SMALL STATE.

The Delaware Republican's Correspondent says the old "Blue Hen" exhibited lately in Washington, from among her small brood of chickens—the Secretary of State, in the person of the Hon. J. M. Clayton, of "*Buena Vista*,"—the largest wheat-grower in all Delaware, Major John Jones, of *Wheatland*, and—the *largest and finest mutton* ever seen in the Washington market, being one of Major Reybold's Oxfordshire breed, weighing 148 pounds, or 37 pounds to the quarter. In John Barney's time, 25 pounds to the quarter for Bakewell was regarded as extraordinary. The *old* Southdown mutton used to weigh 12 pounds. The fact is that every thing is on the advance, and so it was designed by an all-wise Providence. That mankind should be happy, we must be kept on the *qui vive*. Were things at once put at the maximum of improvement, the next thing would be to grow rusty and die of *ennui*. What is wanting now is, to establish courses of education, and application of the sciences expressly adapted to *agricultural improvement*—and then we shall witness as much improvement in the machinery, the practice, and the art of cultivation, as we have witnessed in the medical art, which has so much prolonged the average of human life—or in the art of printing, painting, manufactures, &c. Let the farmers and planters of the Union insist on the appropriation of a large portion of the taxes *they pay*, to the purposes of education, with express reference to a better understanding of all sciences that bear upon the use of the plough and the harrow—and this determination will be accelerated by bringing into their immediate vicinity, the loom and the anvil—because that will be followed by increase of wealth, of leisure, and of self-command, and the power of combination for common benefit.

[Written for "The American Courier," by the Editor of "The Plough, the Loom, and the Anvil."]

THE COST OF BUILDING AND REPAIRING THE FENCES IN THE UNITED STATES,

Is enormous, almost beyond the power of calculation, and forces the inquiry, whether Legislatures ought not to be called upon to compel every man to keep his stock to himself. Then no man, who did not choose to do it, would be forced to enclose his land against the ravages of his neighbor's stock.

Mr. Biddle, a few years since, in an address before the Philadelphia Agricultural Society, stated that the cost of the fences in Pennsylvania amounted to $100,000,000, and their annual expense he estimated at $10,000,000. A distinguished writer on National Wealth, says: "Strange as it may seem, the greatest investment in this country, the most costly production of human industry, is the common fences which enclose and divide the fields. No man dreams that when compared to the outlay of these unpretending monuments of human art, our cities and our towns, with all their wealth, are left far behind. In many places the fences have cost more than the fences and farms are worth. It is this enormous burden which keeps down the agricultural interest of this country, causing an untold expenditure, besides the loss of the land the fences occupy."

Estimating a chestnut post-and-rail fence to last 18 years, and including inside fencing and repairs, the *annual* tax to the farmer holding 150 acres, will be $130 to $140, and judging from present appearances, the tax is perpetual, and there seems but little hope of escape from it.

Did the intelligent farmer reflect a moment, and estimate the annual tax which his fences impose upon him, he would not rest till the system was abolished, or else the live hedge took the place of the present expensive fence of timber.

The system of compelling every landholder to enclose his property is peculiar to the United States, with only the exception of England, where the fence nuisance appears again under the form of the hedge; and although these hawthorn hedges, when they are well tended—and not more than half of them are so—are beautiful objects, and answer all the purposes of protection against the inroads of cattle, still the public voice is beginning to cry out against them, because of the enormous amount of land required to support them. Each hedge is five or six feet wide at its base, and taking into account the amount of land they exhaust on either side, the whole space cannot be less than twelve or fourteen feet wide. When it is recollected that the divisions and subdivisions of land in England are very numerous, the amount of arable land abstracted from the purposes of agriculture is very great. It has been estimated at several million bushels of grain.

Distemper in Dogs.—As few escape, every one ought to have a remedy on which he can depend, instead of waiting until the poor dog's life is in imminent jeopardy, and then running about asking here and there—"Can you tell me what's good for distemper?" Here it is:—

For a half-grown dog, and more or less in proportion to age,

Opium	3 grains.
Tartar Emetic (a capital medicine)	5 "

To be given every third night, until a cure is effected. Keep him in a warm place, and always fed with warm liquid diet, such as broth, gruel, &c.

If there be much discharge at the nostrils, have them washed or syringed twice a day, with a lotion of alum or sugar-of-lead, putting about half an ounce of either to a pint of water.

[Entered according to Act of Congress, in the year 1849, by JOHN S. SKINNER & SON, in the Clerk's Office of the District Court of the Eastern District of Pennsylvania.]

THE AGRICULTURAL SCHOOL-BOOK.

EIGHTH LESSON.

OF MANURING THE SOIL.

1. ANY thing that furnishes food to plants may be called a manure.

2 Of manures there are three principal kinds—vegetable, animal, and mineral.

3. Vegetable manures are those parts of plants which are usually buried in the soil to make it more productive.

4. The most important vegetable manures are grass, clover, straw, hay, &c.

5. The soil is manured with green grass when grass-land is ploughed up.

6. In ploughing up grass-land, the sods should be buried so deep as not to be disturbed by the after-cultivation of the crop, yet not too deep for the roots to reach them early in the growing season.

7. Clover, buckwheat, oats, and rye, are also ploughed in to enrich the soil.

8. Green crops are usually ploughed into light and sandy soils, and into such as contain very little vegetable matter.

9. Sea-weed or sea-ore is a valuable manure, and wherever it can be obtained in large quantity it is found to enrich the soil very much.

10. Sea-ore is either spread over the land and allowed to rot and sink in, or it is made into a compost, or it is put into the furrow in a fresh state; care is taken, if potatoes are the crop, to prevent the sets from touching the sea-weed, by putting a little earth between them.

Note.—When the potato sets are allowed to touch the sea-weed they are often observed to rot.

11. When used in a fresh state, sea-weed will give large crops of potatoes, but they are not of the best quality.

12. The best way to use sea-weed is in the form of a compost of earth or marl, and the mixture should be turned over once or twice before using it.

13. Hay is usually fed away to the horses or stock, and afterwards put upon the land in the shape of their dung.

14. Straw is either fed away or used as litter, and then hauled out in a more or less fermented state.

15. For light land, the manure made from straw should be pretty well fermented: for stiff land not so much so.

16. The most important animal manures are the blood, flesh, bones, hair, wool, and the dung and urine of animals, and the refuse of fish.

17. In this country as yet very little use has (notwithstanding its great value) been made of blood as a manure. In other countries it is dried, and is then applied as a top-dressing, or is drilled in with the seed. It is one of the most powerful manures.

18. The flesh of dead horses, cows, and dogs, buried in saw-dust or soil, with a little marl, makes a most enriching compost.

19. Bones are crushed in mills, and then sifted into the various sizes of inch bones, half-inch bones, and dust.

20. Bones act most quickly in the form of dust, but they do not act for so long a time.

21. Bones are most profitably employed on light, or on well-drained lands, instead of the whole or of a part of the farm-yard manure. They are often mixed with wood ashes.

22. Bones have been found very beneficial to grass-lands that are pastured for dairy purposes or for stock generally; even where these lands are wet, bones have produced remarkable benefits.

23. Bones consist of glue or gelatine, which may be partly extracted by boiling them in water—and of bone-earth, which remains behind when the bones are burned.

24. Bone-earth consists chiefly of phosphoric acid and lime.

100 lbs. of *bone-earth*, as it is obtained by burning bones, contain about 45 lbs. of phosphoric acid.

QUESTIONS.

1. What is manure?
2. How many principal kinds of manure are there?
3. What do you mean by vegetable manures?
4. Name the most important vegetable manures.
5. How, or when is the soil manured with green grass?
6. At what depth should the sod be turned under?
7. What other crops are ploughed in as green manure?
8. What description of lands are most benefited by green manures?
9. What of sea-ore?
10. How is sea-ore applied?
11. What is said of sea-ore when used in a fresh state?
12. Which is the best way to use sea-ore?
13. What of hay?
14. What use is made of straw?
15. What is said of the degree of fermentation in straw manure?
16. What are the most important animal manures?
17. How is blood managed?
18. How is the flesh of animals made into manure?
19. How are bones prepared?
20. How do bones act most quickly?
21. How are bones most profitably employed?
22. On what lands have bones been found beneficial?
23. What do bones consist of?
24. What is the composition of bone-earth?

NINTH LESSON.

OF MANURING THE SOIL. (*Continued.*)

1. As all plants contain, and therefore require for their healthy growth a certain quantity of lime and phosphoric acid, bone-earth must make a good manure.

2. Dairy pastures—milk and cheese contain bone-earth. If these be carried away and sold off the farm for a number of years, the land is robbed by degrees of its bone-earth more than of any other substance. Only those grasses can then grow which require little bone-earth.

Every ten gallons of milk contain about half a pound of bone-earth. A cow, therefore, which gives twenty quarts a day, takes about two pounds of bone-earth from the soil every week. To return these two pounds to the soil, three pounds of dry bones, or four pounds of common bone-dust are required.

3. As the bones supply the bone-earth of which the land has been robbed, new grasses spring up which contain much bone-earth, and these, when eaten by the cow, produce milk in greater abundance, and richer in cheese.

4. Bones are sometimes dissolved in sulphuric acid (oil of vitriol) previous to being applied.

5. To dissolve bones, about equal weights of bone-dust and sulphuric acid are taken. The acid is diluted with three times its bulk of water, and poured upon the bones, and the mixture is stirred occasionally for two or three days.

The teacher may show how this is done, and explain that the liquid or *paste* may either be further diluted with thirty times its bulk of water, and applied with a water-cart, or may be dried up with powdered charcoal, peat, saw-dust, or soil, and

drilled in, or used in the hill as bones usually are. The relative proportions of bones and acid may also be varied—two or three of bones being sometimes used to one of acid.

6. One of the chief advantages of dissolving bones is, that the substances of which the bones consist are very minutely divided. They can thus enter more readily into the roots of plants, and a smaller quantity produces an equal effect upon the crop.

7. Hair is generally too expensive to be used as a manure. But in China, where the people's heads are all shaved, the shavings are collected for manure. There are many small tanneries far in the interior of our own States where large quantities of hair is wasted.

8. Wool is used as a manure in the form of woollen rags. Mixed with earth, woollen rags make an excellent compost. They are much used for manuring the hop grounds in England.

The teacher may here describe the hop-plant, and explain the purpose for which it is employed by the brewers.

9. Of animal dung the most commonly used are night-soil, horse-dung, cow-dung, sheep's-dung, hog's-dung, and bird's-dung.

10. The most valuable of these are night-soil and birds'-dung; next to these is horse-dung; after that, pig's-dung; and, lastly, cow's-dung.

11. Night-soil is most valuable, because men generally live upon a mixture of animal and vegetable food, which renders the dung richer.

12. The solid part of horse-dung is richer than cow-dung, because the horse voids little urine compared with the cow.

13. Hog-manure is said to give a disagreeable taste and smell to the crops raised from it.

14. The best way to use hog's-dung is to make it into a compost or mix it with the dung of other animals.

15. Cow-dung is cooler and less liable to ferment than most other kinds of dung, because the large quantity of urine voided by the cow carries off a greater proportion of that which would otherwise cause it to ferment.

16. The mixed dung of animals differs from the food on which they live, principally in containing a less proportion of carbon, and a greater proportion of nitrogen.

17. The dung contains less carbon than the food, because animals throw off a large quantity of the carbon of their food during breathing.

18. The carbon of the food comes off from the lungs in the form of carbonic acid gas. (See figs. 9, 10, 11, and page 551.)

19. A full-grown man gives off from his lungs about half a pound of carbon in a day, a cow or a horse eight or ten times as much.

20. Nearly all the nitrogen of the food remains in the dung and urine, mixed with a smaller quantity of carbon than was in the food.

21. This greater proportion of nitrogen is one of the principal causes of the greater activity of the dung of animals.

22. During the fermentation of the manure, nitrogen for the most part assumes the form of ***ammonia.***

QUESTIONS.

1. Why does bone-earth make a good manure?
2. What is said of bone-earth in reference to dairy pastures?
3. How does the application of bones affect these pastures?
4. What preparation do bones sometimes undergo before being applied to the land?
5. How are bones dissolved for this purpose?
6. What is one of the chief advantages gained by this?
7. What is said of hair as a manure?
8. What of wool?
9. What kinds of animal dung are most used?

10. What is the relative value of the different kinds of dung?
11. Why is night-soil the most valuable?
12. Why is horse-dung richer than cow-dung?
13. What is said of the effects of hog-manure?
14. How is it recommended to use hog-dung?
15. Why is cow-dung less liable to ferment than other kinds?
16. In what does the dung of animals differ from their food?
17. Why does the dung contain less carbon than the food?
18. In what form does the carbon of the food come from the lungs?
19. What quantity of carbon is given off daily by men and horses?
20. What of the nitrogen contained in the food?
21. What is one of the principal causes of the greater activity of animal manures?
22. What form does the nitrogen assume during fermentation?

TENTH LESSON.

OF MANURING THE SOIL. (*Continued.*)

1. Ammonia is a kind of air that has an exceedingly strong smell, and possesses alkaline properties—the common hartshorn of the shops is merely water impregnated with this gas.

Here the teacher may exhibit a bottle of hartshorn or of smelling salts, (carbonate of ammonia,) and make his pupils acquainted with the smell of ammonia. He may likewise show that hartshorn restores the blue color to vegetable blues that have been reddened by an acid, and is therefore alkaline.

The teacher may also at this stage take the opportunity of examining his pupils on the properties of *all the six* kinds of air described in the Catechism—namely, hydrogen, oxygen, nitrogen, chlorine, carbonic acid, and ammonia. He may ask in what properties they agree, and in what they differ from each other, and so on.

2. Ammonia is produced in fermenting compost or manure-heaps, and in fermenting urine, and it is the cause of the smell perceived in hot stables.

3. To detect the presence of ammonia, take a feather, dip it in vinegar, and hold it over the manure-pile or compost-heap—if ammonia is present in the air, white fumes will become visible.

The teacher will show this experiment by dipping a glass rod or feather into vinegar, or into muriatic acid, and holding it over the mouth of his hartshorn bottle, when white fumes will become visible, showing that ammonia is escaping in the form of gas.

4. Ammonia consists of the two gases, nitrogen and hydrogen.

14 lbs. of nitrogen and 3 lbs. of hydrogen make 17 lbs. of ammonia.

5. The ammonia of the manure is dissolved in the soil by water, and is then sucked in by the roots.

6. The gluten and other substances containing nitrogen, are formed in the plant by the aid of ammonia.

7. As nitrogen, in some shape or other, is absolutely necessary to the growth of plants, it follows that ammonia is a very important ingredient in manures.

8. The liquid parts especially of cow's manure produce the most ammonia.

9. As most of the ammonia is produced by the liquid parts of the manure, it is of the greatest importance that this should be carefully saved, and not allowed, as is too often the case, to run to waste.

10. A large tank or cistern should be made in every farm-yard, to collect the liquid manure.

Note.—The tank should be separated into two divisions by a partition wall, built in the middle of it. Each division should be capable of containing one or two months' supply of the liquid. When the one is full the stream should be turned into the other, and when this also is full, that which is in the first division will be fermented, or ripe enough for laying upon the land.

11. The liquid manure should be occasionally pumped upon the manure-heaps to promote fermentation; or it should be poured upon the compost.

12. A good way to apply liquid manure during spring and summer, is to dilute it with once or twice its bulk of water, and after it has fermented for some time, it can be put upon grass land, young clover, or other young crops, with a water-cart.

13. There is this difference between the fermented urine of cows, horses, and sheep, and the drainings of manure-heaps—the first contains potash, soda, and ammonia, while the last almost always contain phosphates.

14. The ammoniacal liquor of the gas-works, diluted with four or five times its bulk of water, should be collected and employed in the same way as the liquid manure of the farm-yard.

15. The manure from birds is especially rich; and the dung of sea-fowl has lately been introduced into this country under the name of guano.

16. Guano is employed as a top-dressing—is ploughed in the land before seeding, and is composted with woods earth.

17. Care should in all cases be taken to prevent the seed or potato-sets from coming in immediate contact with guano.

18. Guano should never be mixed with quick-lime, because the lime sets free the ammonia contained in the guano, and causes it to escape into the air.

Here the teacher may mix a little slacked lime with a spoonful of guano in a wine glass, and let his pupils smell the ammonia which will come off. Or he may hold over it a feather dipped in vinegar, and show the white fumes. If he have no guano he must use a little *sal-ammoniac* or a little *sulphate of ammonia* instead; and may explain that *quick*-lime will, in the same way, drive off ammonia contained in liquid manure and in horse or farm-yard dung, if it be mixed with any of these.

19. In manuring potatoes, turnips, beets, &c., it is better husbandry to mix the guano with one-half common manure.

20. Guano used alone does not supply a sufficient quantity of organic matter to maintain the soil in its most productive state.

QUESTIONS.

1. What is ammonia?
2. How is ammonia produced?
3. How is the presence of ammonia detected?
4. Of what does ammonia consist?
5. How is ammonia taken up by the roots?
6. How is the gluten and other substances containing nitrogen formed in the plants?
7. Is ammonia an important ingredient in manures, and why?
8. What parts of the manure produce the most ammonia?
9. What is said of the importance of liquid manure?
10. How is the liquid manure to be saved?
11. How is liquid manure managed?
12. How is liquid manure applied?
13. What is the difference between the fermented urine of animals and the drainings of manure?
14. What is said of ammoniacal liquor?
15. Is the manure from birds rich?
16. What is guano, and how is it applied?
17. What caution is to be used with guano?
18. Should quick-lime be used with guano—if not, why?
19. What about the application of guano to potatoes, turnips, beets, &c.?
20. What is the objection to the use of guano by itself?

ELEVENTH LESSON.

OF MANURING THE SOIL. *(Concluded.)*

1. Two cwts. of guano per acre for top-dressing wheat and grass, and three cwts. mixed with manure for corn, potatoes, turnips, &c., is about the proper quantity of guano to apply.

2. Fish in some districts are largely used as manure.

3. The best way to use fish is in the form of compost with earth, and with marl if to be had.

4. The most important mineral manures are nitrate of soda, sulphate of soda, common salt, wood-ashes, kelp, and lime.

5. Nitrate of soda is a white salt-like (saline) substance, which is found in the earth in some parts of Peru, and is often applied with great advantage as a top-dressing to grass-land and young wheat.

Note.—To show the difference between nitrate of soda and common salt, with which it is often adulterated, sprinkle a little of each on a red hot cinder. The common salt will crackle and leap in the fire, (*decrepitate,*) while the nitrate of soda will cause a bright flame or burning, (*deflagration.*) Saltpetre (nitrate of potash) will do the same as nitrate of soda.

6. Nitrate of soda consists of nitric acid and soda.

54 lbs. of nitric acid and 31 lbs. of soda form 85 lbs. of nitrate of soda.

The teacher may take this opportunity of verbally explaining the terms by which chemists denote combinations of the nitric, sulphuric, phosphoric, and carbonic acids with potash, soda, lime, and magnesia—thus, when carbonic acid combines with any of these substances it forms a carbon*ate*, phosphoric acid a phosph*ate*, sulphuric acid a sulph*ate*, nitric acid a nitr*ate*. Hence, that *phosphate of lime* denotes a combination of phosphoric acid with lime, *sulphate of soda* a combination of sulphuric acid with soda, and so on.

7. Nitric acid is a very sour corrosive liquid, called also aquafortis. It consists of two gases, nitrogen and oxygen.

14 lbs. of nitrogen and 40 lbs. of oxygen form 54 lbs. of nitric acid. It may be shown, 1°. That it stains the fingers yellow. 2°. That when poured upon a bit of copper, (a cent,) it becomes hot and of a deep blue color, and gives off red fumes.

The teacher may here also interrogate his pupils as to the difference between the three powerful and common acids—the nitric, muriatic, and sulphuric, mentioned in this work. The *sulphuric* being oily, becoming hot when mixed with water, charring wood or straw, and giving off hydrogen when poured upon zinc or iron—the common *muriatic* acid giving off fumes into the air, forming a white cloud when a feather dipped in hartshorn is held over it, and giving off chlorine when it is poured upon oxide of manganese—the *nitric* having the properties above stated.

8. The benefit of nitrate of soda depends upon its supplying nitrogen and soda to the growing crops.

9. From 1 cwt. to 1½ cwt. of nitrate of soda is applied to the acre.

10. Sulphate of soda is the substance commonly called Glauber salts, and consists of sulphuric acid (oil of vitriol) and soda. It sometimes produces good effects when applied as a top-dressing to grass-land, to turnips, and to young potatoes.

40 lbs. of sulphuric acid with 31 lbs. of soda form 71 lbs. of dry sulphate of soda.

11. Common salt may either be applied as a top-dressing, or it may be mixed with the farm-yard or other manure, or with the water used in slaking quick-lime.

12. Salt is most likely to be beneficial in places that are remote from the sea, or are sheltered by high hills from the winds that pass over the sea.

13. Lands near the sea do not require salt, for the winds bring with them a portion of the sea-spray, and sprinkle it over the soil to a distance of many miles from the sea-shore.

14. Gypsum is a white substance composed of sulphuric acid and lime; it forms an excellent top-dressing for red clover, and also for peas and beans.

40 lbs. of sulphuric acid and 28½ lbs. of lime form 68½ lbs. of *burned* gypsum, which contains no water.

40 lbs. of acid, 28½ lbs. of lime, and 18 lbs. of water, form 86½ lbs. of native or un-

burned gypsum. Native or unburned gypsum loses about 21 per cent. of water when heated to dull redness, becoming burned gypsum.

The teacher may heat a little unburned gypsum on the end of a knife, (fig. 14,) or in a tube over a candle, and show, *first*, that it becomes opaque and milk-white; *second*, loses water and becomes lighter; and, *third*, that after heating, it readily crumbles to a fine white powder.

This fine white powder is the plaster of Paris, which is used for making casts, and for the cornices of rooms.

15. These substances ought to be applied in calm weather, in order that they may be equally spread—and soon after or before rain, that they may be dissolved.

16. A mixture of nitrate and sulphate of soda usually produces a much more beneficial effect upon potatoes than either of them alone, and the same is often the case with a mixture of common salt and gypsum when applied to beans.

17. Kelp is the ash that is left when sea-weed is burned in large quantities.

18. Kelp may be used to top-dress grass-lands and young wheat—mixed with ordinary manure, it may be used with great advantage on turnips, potatoes, &c.

19. Kelp so far has been but little used as a manure, though there is no good reason why it should not be in many districts.

20. Wood-ashes make a valuable manure—of great benefit to all crops, but especially to the family of the grasses.

QUESTIONS.

1. What is the quantity of guano usually applied to the acre?
2. Are fish used as a manure to any extent?
3. Which is the best way to use fish as a manure?
4. Name the most important mineral manures?
5. Describe nitrate of soda?
6. What does nitrate of soda consist of?
7. What is nitric acid?
8. On what do the beneficial effects of nitrate of soda depend?
9. How much nitrate of soda is usually applied to the acre?
10. Describe sulphate of soda?
11. How is common salt used?
12. Where is salt most likely to be beneficial?
13. Why do not lands near the sea require salt?
14. What is gypsum?
15. How and when should these substances be applied?
16. Are mixtures of these substances sometimes more beneficial than any of them applied singly?
17. What is kelp?
18. How may kelp be used?
19. What other remark is made about kelp?
20. Are wood-ashes valuable as manure?

TWELFTH LESSON.

OF LIMESTONE, AND OF THE BURNING AND USE OF LIME.

1. Limestone consists of lime (*quick*-lime) in combination with carbonic acid.

28 lbs. of lime and 22 lbs. of carbonic acid make 50 lbs. of limestone.

The teacher may here revert to the properties of carbonic acid, and examine his pupils upon what they had previously learned upon this subject.

2. Limestone is called by chemists carbonate of lime.

3. There are many varieties of limestone: some soft, such as chalk—some hard, such as our common limestones—some of a yellow color, like the magnesian limestones, which contain magnesia—some pure white, like the statuary marble—some black, like black marble, and so on.

Here it would be advantageous if the teacher could exhibit some of these or of other varieties of limestone.

4. Marl is the same thing as limestone, namely, carbonate of lime, only it is often in the state of a fine powder, and often also mixed with earthy matter.

5. Shell-sand or broken sea-shells is also the same thing almost exactly as common limestone.

6. Marl and shell-sands may be applied with advantage, either as a top-dressing to grass-lands, and especially to sour, coarse, and mossy grass—or they may be ploughed or harrowed in upon arable fields—and especially they may be applied with advantage and in large quantity to peaty soils.

7. Lime and marl are largely employed in making composts.

8. To ascertain the presence of lime in a soil or in a substance supposed to be marl—put a little of either in a glass, pour upon it either vinegar or weak spirit of salt (muriatic acid.) If any bubbling up (effervescence) appears, you may conclude that lime is present.

9. This bubbling up is occasioned by the escape of carbonic acid from the carbonate of lime contained in the soil or marl.

Here the teacher may perform this experiment by pouring a little weak acid upon marl or powdered chalk in a wine-glass, and showing the bubbling up. He may further convince his pupils that the gas given off is really carbonic acid, by introducing a lighted taper into the glass, when it will be extinguished. (See fig. 2.)

10. When limestone is burned in the kiln, the carbonic acid is driven off by the heat, and the lime alone remains.

The teacher may here pour diluted muriatic acid upon a few bits of limestone in a tumbler, and show that carbonic acid is given off, and therefore *is contained in the limestone.* He may then pour muriatic acid upon a piece of well-burned lime, and show that no gas is given off, and therefore that *no carbonic acid is contained in the quick-lime.* It *has been* driven off by the heat.

11. After limestone has been submitted to the action of heat, it is called quick-lime, caustic-lime, hot-lime, &c.

12. A ton of limestone yields about $11\frac{1}{4}$ cwts. of quick-lime.

Fig. 15.

13. When water is poured upon quick-lime the lime drinks it in, becomes very hot, swells up, and gradually falls to powder.

The teacher may exhibit this effect of water upon lime, and may satisfy his pupils that the heat produced is great, by showing that it will sometimes set fire to gunpowder placed upon a dry portion of the lime, or will heat a cold baked pie when put in the middle of it.

It requires a piece of very good and well-burned lime to fire powder in this way; but the experiment will be more sure to succeed if sulphuric acid, diluted with one or two waters, be used, instead of pure water. The mass will become so hot as readily to fire gunpowder. In this case, however, it will be *gypsum,* (plaster of Paris,) and not merely *slaked lime* that will be produced.

14. Pouring water upon lime so as to make it fall is called *slaking* the lime, and the lime is called slaked or slacked lime.

15. One ton of quick-lime becomes 25 cwts. of slaked-lime.

This may be shown by slaking a weighed piece of lime, and weighing it again after it has fallen to a fine powder.

16. Quick-lime, when exposed to the air, absorbs water from it, and gradually falls to powder.

17. Besides water, quick-lime gradually absorbs carbonic acid from the air, and at length returns to the state of carbonate.

The teacher may here satisfy his pupils that lime does thus absorb carbonic acid from the air, by pouring a little lime-water into a saucer, and showing them that an insoluble film of white *carbonate of lime* gradually forms upon its surface. This

experiment may be exhibited for the purpose of showing two things: *first*, that carbonic acid exists in the air, and, *second*, that quick-lime absorbs it.

18. Limestone thus *returned* to the state of a carbonate is in the state of a far finer powder than it could be got by any other means, and can thus be more thoroughly mixed with the soil.

19. When quick-lime has returned to the state of a carbonate, it is usually called mild lime.

20. Caustic-lime acts upon land very much in the same way as mild lime, but more quickly.

21. The mild and the caustic both act by supplying the lime which all plants require as part of their food—by combining with acids in the soil, so as to remove the sourness of the land—and by converting the vegetable matter into the food of plants.

22. Lime should always be kept near the surface, as it has a tendency to sink.

23. To peaty soils, to heavy clay soils, to arable lands which are very sour, and to such as contain a great deal of vegetable matter, *quick* in preference to mild lime should be applied.

24. Mild lime, on hill pasture, is said to produce a better and more lasting effect when it has become wet—or *dabby*, as it is called—by exposure to the air and rain, than when put on in a dry and newly slaked state.

25. The same quantity of lime will produce a greater effect upon drained or naturally dry land, than upon wet land.

26. The quantity of lime to be applied depends so much upon various circumstances, that it is difficult to lay down rules for it. If the land is poor in vegetable matter, it should not receive as much lime as if it were rich in that substance—the quantity varies from **25** to **100** bushels—the smaller the quantity the sooner it will require renewal. In England, from **8** to **10** bushels a-year per acre is applied; it is not put on every year, but at every rotation, or every second rotation; sometimes only once in nineteen years.

27. Lime sooner or later requires renewal: *first*, because the crops eat up and carry off a portion of the lime; *second*, because a portion of it sinks into the subsoil; and, *thirdly*, because the rains are always washing a portion of it out of the land.

QUESTIONS.

1. What does limestone consist of?
2. How is limestone called by chemists?
3. Are there many varieties of limestone?
4. What is marl?
5. What is shell-sand?
6. How are marl and shell-sand used?
7. Is lime used in composts?
8. How is the presence of lime ascertained?
9. What occasions the bubbling up?
10. What occurs when limestone is burned?
11. What is limestone called after it has been submitted to the action of heat?
12. How much lime does a ton of limestone yield?
13. When water is poured upon quick-lime what occurs?
14. What is the act of pouring water upon quick-lime called?
15. How much slaked lime will one ton of quick-lime make?
16. What occurs when quick-lime is exposed to the air?
17. What else does quick-lime absorb from the air?
18. What is the advantage of limestone returned to the state of a carbonate?
19. How is lime then called?
20. How does caustic lime act?
21. How do all kinds of lime act?
22. How deep should lime be put?
23. To what kind of lands would you apply lime?
24. What of mild lime?
25. Will lime produce the greatest effect upon drained or upon wet land?
26. What is said of the quantity of lime to be applied?
27. Why does lime require renewal?

THIRTEENTH LESSON.

OF THE COMPOSITION OF THE CROPS WHICH THE FARMER REAPS.

1. The different kinds of grain consist chiefly of three substances, starch, gluten, and oil or fat.

2. 100 lbs. of wheaten flour contain about 50 lbs. of starch, 18 lbs. of gluten, and 6 lbs. of oil.

3. The principal constituent of potatoes and turnips is water.

4. 100 lbs. of potatoes contain 75 lbs. of water.

5. 100 lbs. of turnips contain 88 lbs. of water.

6. 100 lbs. of potatoes contain from 15 to 20 lbs. of starch.

7. The proportions of gluten and starch are not always the same. Some varieties of wheat contain more gluten than others, some varieties of oats more oil than others, and some varieties of potatoes more starch than others.

8. The wheat of warm climates is said to contain most gluten, and the potatoes and barley grown upon light or well-drained land, more starch.

9. When potatoes or grain are burned they leave a small quantity of ash.

10. The ash of potatoes and grain consists of the phosphates of potash, soda, lime, and magnesia, of common salt and other saline substances.

The teacher may here more fully explain the composition of the ash, by referring to Table on page 630, which exhibits the composition of the ash of different kinds of grain, and explaining that the ash both of grain and of the ordinary root crops contains a certain quantity of all the substances there mentioned, but that phosphoric acid, in combination with potash, soda, magnesia, and lime, are its *most important* ingredients.

USES OF THE CROPS IN FEEDING.

11. Vegetables are chiefly intended for the food of animals.

12. To maintain an animal in a healthy state, its food must furnish starch, gluten, oil or fat, and saline or inorganic matter.

13. Starch consists of carbon and water.

14. Animals require starch in their food to supply the carbon which they throw off from their lungs during respiration.

The teacher may here explain that gum and sugar, which also consist of carbon and water only, (page 624,) serve the same purpose when eaten as the starch of our food does, and what is for sake of simplicity here said of starch only, is true also of the sugar and gum contained in the vegetable substances we eat.

15. A man throws off from his lungs from six to eight ounces of carbon in a day.

16. A man will require to eat nearly a pound of starch in a day, to supply the quantity of carbon given off by his lungs in that time.

10 oz. of starch contain about 4½ of carbon, (page 624).

17. Carbon is given off from the lungs of animals in the form of carbonic acid gas.

18. The carbonic acid gas given off from the lungs of animals is diffused through the air and is afterwards absorbed again by plants, in order that new quantities of starch may be produced from it.

The teacher may here appropriately draw the especial attention of his pupils to the beautiful cycle of natural operations above described. Even children may be made to see the beauty and bounty of the processes by which the same carbon is again and again transformed by the plant into starch, and by the animal into carbonic acid—as well as the purpose for which these changes are made to take place—namely, *to keep up the warmth of the animal body.*

19. An animal requires gluten for the purpose of repairing the daily waste of the muscles or lean part of its body.

20. Not only the muscles, but nearly all parts of the body suffer a certain waste every day.

21. The parts thus wasted, are carried through the body, and form part of the dung and urine of the animal.

22. Gluten repairs the waste of the muscles, because it is almost exactly the same thing as muscle.

23. The animal requires oil or fat in its food to supply the natural waste of fatty matter which takes place.

24. When the food given an animal contains more oil than is necessary to supply the natural waste, the animal may become fat.

25. Food that contains much oil is the best for fattening—of two samples that which contains the most oil will *generally* fatten most quickly.

26. To supply the daily waste of the bones, and the salts in the blood, it is necessary that the food should contain phosphate of lime, and other inorganic substances.

27. The gluten and the saline matter not only supply the daily waste, but they add daily to the weight of the animal's body as it grows.

28. A growing animal of the same size will require more of these kinds of food than a full-grown animal.

29. If the same quantity of food is given to a growing and to a full-grown animal, the latter will produce the richest manure.

30. A growing animal extracts and retains more substance from the same quantity of food than a full-grown one, because he has not only to supply the natural waste, but to add daily to his size, while the full-grown animal has only to supply the daily waste.

31. The manure from fattening stock is richer than that of growing stock or cows in milk, because they retain chiefly the oil and starch of their food, and reject nearly all the remainder.

32. To convert a given amount of food into the greatest quantity of beef or mutton, the cattle or sheep should be kept in a warm or sheltered place, where they might have wholesome air and but little light, and they should be disturbed as little as possible.

33. Merely to fatten a full-grown beast, keep it warm, disturb it little, and give it corn-meal, with plenty of turnips or beets and hay.

The degree of warmth and confinement under which animals will thrive, depends much upon the breed. The hardy and wild cattle from the Blue Ridge and Alleghany would pine away in the warm and confined sheds in which the short-horned thrives best. The Bakewell does better in confinement than the Southdown and common stock.

34. If the object is to convert a large quantity of hay or straw into manure, the animals should not be kept so warm, and should take more exercise.

35. To get the largest quantity of milk, feed with rich juicy grass, turnips tops and all, green rye, warm mashes, or other food containing much water —and a free supply of drink.

36. To get milk of the best possible *quality*, give as much as can be eaten of dry food—oats, corn-meal, beans, bran, and clover-hay.

37. To get milk particularly rich in *butter*, give the same food that is given to a fattening animal—flax-seed, oats, corn-meal, and some roots.

38. To obtain milk that will produce the most cheese, feed on beans, peas, clover or clover-hay, all of which make the milk richer in curd.

39. As a general rule in fattening animals, for cattle let the food be fresh and sweet, for hogs slightly sour.

40. It has been found that much more pork is obtained from green vege-

tables, or from corn-meal or boiled potatoes, when mixed with water and left to sour, than when given fresh and sweet.

41. Cleanliness, warmth with good ventilation, feeding at regular intervals, and at least three times a day, contribute much to success in fattening animals of all kinds.

While on this part of the subject the teacher may draw the attention of his pupils to the beautiful chemical connection which exists between the vegetable and animal kingdoms, and especially to the marked adaptation of *the living vegetable to the wants of the living animal, which is exhibited in the fact*, that the animal finds ready formed in the ripened plant, all the most important substances of which its own body is composed. The gluten of its food is nearly identical with the fibre of its muscles—the oil is similar in character to the fat of its body—while the bone-earth of the plant supplies materials for the bones of the animal, and the starch and sugar afford the carbon which is necessary for the purposes of respiration. Finally, he may also point out, that, when the vegetable food has discharged its office in the animal body, it returns to the earth in the form of dung—only to enter into the roots of new plants, and thus to produce new supplies of sustenance for other races of animals. The entire economy of vegetable and animal life, and all the changes experienced by dead matter, are parts of one system—express, as it were, but one idea, the offspring of ONE MIND.

He may thus engraft a course of instruction in Natural Theology upon the purely practical principles of this little book, and make it instrumental not only in the intellectual, but also in the *moral* training of his pupils.

QUESTIONS.

1. Of what substances do the different kinds of grain usually consist?
2. What proportion of each of these usually exists in wheat?
3. What do potatoes and turnips principally consist of?
4. What is the proportion of water in potatoes?
5. What is the proportion of water in turnips?
6. What is the proportion of starch in potatoes?
7. Are the proportions of grain and starch always the same in grain and roots?
8. Has climate any thing to do with the proportions of these ingredients?
9. Do potatoes or grain leave any ash when burned?
10. What does this ash consist of?
11. What purposes are vegetables intended to serve?
12. What substances must an animal derive from its food to maintain it in a healthy state?
13. What does starch consist of?
14. For what purpose does an animal require starch in its food?
15. How much carbon does a man throw off from his lungs in a day?
16. How much starch must a man eat daily to supply the carbon given off by his lungs?
17. In what form is carbon given off from the lungs of animals?
18. What becomes of the carbonic acid thus given off?
19. For what purpose does an animal require gluten in its food?
20. Are the muscles of animals really subject to waste?
21. What becomes of the parts thus wasted away?
22. How can gluten repair the waste of muscle or lean?
23. Why does an animal require oil or fat in its food?
24. Does it serve any other purpose?
25. Is food that contains much oil, then, the best for fattening?
26. Why must the food of animals contain phosphate of lime and other inorganic matters?
27. Do not the gluten and the saline matter serve a further purpose when the animal is growing?
28. Will a growing animal on this account require a larger supply of these kinds of food?
29. With the same food, which will produce the richest manure, a growing or a full-grown animal?
30. Why is this so?
31. Why is the manure from fattening cattle richer than that of growing stock or cows in milk?
32. How would you convert a given amount of food into the greatest amount of beef or mutton?
33. Merely to fatten a full-grown beast, what should be done?
34. If the object is to convert straw or hay into manure, how is the stock managed?

35. How do you get the greatest quantity of milk from cows?

36. How do you improve the quality of milk?

37. How do you feed to get milk rich in butter?

38. How will you get milk rich in cheese?

39. As a general rule in fattening cattle and hogs, would you give the food sweet or sour?

40. Why would you give the food sour to hogs?

41. What other rule would you observe in fattening stock?

AMOUNT OF WOOL FOR THE COMING CLIP.

"*The Wool-grower, and Magazine of Agriculture and Horticulture,*" is the title of a new periodical, of which the first number, dated March 1, has appeared at Buffalo, New York. The attractiveness and importance of the subjects—the locality of the journal, and the practical experience, ability, and patriotic aim of the editor—T. C. PETERS—ought to assure its success. It will be published monthly—sixteen pages, at *fifty cents a year.*

We find in this first number the following items. The Editor, who enjoys peculiar advantages to form a correct judgment, would seem to agree with Mr. Randall in this number of our journal, as he concludes his observations on the prospects of the wool-market by saying: "Our own opinion is that the prices will range considerably higher than last season."

"The whole number of sheep in the United States, as shown by the censuses in 1840, was 19,311,374; and the quantity of wool shorn was 35.802,114 lbs. Of the sheep, about one-fourth were under the age of one year; leaving, therefore, about 14,500,000 as the number shorn. This would give 2½ lbs. as the average weight of fleece, which is below the average in this State, as shown by the census of 1845. The average here was 3 lbs.

"The increase of sheep in this State from 1840 to 1845:—

1845	6,443,855
1840	5,118,777
Increase in 5 years,	1,325,078, or a fraction over 25 per cent.

"The increase of wool during the same time, was:—

1845	13,864,828 lbs.
1840	9,845,295 lbs.
Increase in 5 years,	4,019,533 lbs.

"This shows that the increase of wool was equal to the general average per head in this State of 3 lbs.

"Allowing for the same ratio of increase, as is shown in this State, and the whole number of sheep in the Union, in 1845, would be almost twenty-four millions. Of these, eighteen millions would be over one year old, so that the clip of that year was at 2¾ lbs. per head—about fifty millions of lbs.

"The whole number of sheep in the Union, in 1850, will not vary much from thirty millions, which, upon the above data, will give about seventy millions lbs. of wool for the clip of that year, and the clip of this year must be equal to about sixty-six millions—or only a trifle over 3 lbs. for each inhabitant of the Union.

"Of this quantity, not over one-fifth will be worked up at home; leaving upwards of fifty-three millions for the manufacturer, and with old stock which will be left over, making about sixty millions of pounds for the coming year. R. L."

The mange in hogs is cured with sulphur in food, and washing with suds, or feeding with poke-root; or it boiled and the liquor fed with meal or grain.

The mange in dogs is cured by washing them daily in tan ooze, and giving sulphur occasionally.

CALCULATION OF THE PRODUCE OF A SHEEP FARM

FOR TEN YEARS, COMMENCING WITH A STOCK OF FIVE HUNDRED EWES.

Years.	Annual Increase.	Total Number.	Quantity Wool.	Value Wool.	Annual Loss.	Annual Expense.
1	1,000	1,500	lbs. 1,500	$ 150		$ 150
2	1,000	2,500	4,500	450		200
3	2,000	4,500	7,500	750		250
4	3,000	7,500	13,500	1,350		500
5	5,000	12,500	22,500	2,250		800
6	8,000	20,500	37,500	3,750		1,200
7	13,000	33,500	61,500	6,150		1,800
8	21,000	54,500	100,500	10,050		2,000
9	34,000	88,500	163,500	16,350		3,000
10	45,000	133,500	265,500	26,550		4,000
	133,000	133,500	678,000	67,800		13,900

Deduct possible per centage . .	$10,700
	57,100
	13,900
Profit	$43,200

Capital Required for such a Farm.

500 ewes	$300
25 rams	250
4 yoke oxen	80
4 cows	40
1 bull	20
Horses	50
Hogs	50
Implements	50
Seed, and expense tilling first crop	50
Total	$890

The quantity of wool is estimated at the lowest rate, not allowing for the increased weight of fleece, consequent on the improvement of the Mexican breed by crossing with the Leicester ram. The value of the wool is estimated at the present price of Mexican wool, 10 cents: a very slight improvement in quality and care would raise the price to 15 or 20 cents per pound. The loss is estimated much too high; perhaps 5 per cent. would be too much.

F. B. O. SHAY.

San Antonio de Bexar, Dec. 29, 1848.

PROSPECTS FOR THE EXPORT OF GRAIN TO ENGLAND.

"LETTERS have been received at Oswego from England, stating that contracts to some extent had been made to deliver first qualities Dantzic wheat at Liverpool on the earliest opening this spring of the Baltic navigation, at forty shillings sterling per imperial quarter, which brings the price (if it was shipped from New York) equal to eighty-five cents per bushel at New York. Dantzic wheat, of the best quality, says the Oswego Times, may be compared to our very best Genesee wheat."

We commend the above paragraph to the consideration of our farming and planting readers. Eminent men, like the late Governor Wright,* insist that it is impossible we should make a market at home for all our surplus food, and that we must prepare for competition in the great grain

* See December No. page 337.

markets of the world with the serfs of Russia, and the miserable fellahs of Egypt. The Hon. Commissioner of Patents assured his readers that he was fully satisfied we could compete with them, and the late Secretary, pointing with pride to the large export consequent upon the railroad mania and potato-rot of 1846, assured the nation that it must go on to increase, provided only that we persisted in purchasing largely of foreign food in the forms of cloth and iron, and yet we are now informed that contracts are being made for wheat at prices equivalent to eighty-five cents per bushel in New York!

It is time for planters and farmers to look for something approaching to certainty, and to make an effort to put an end to the system that thus converts farming and planting into mere gambling. As things now are, the man who sows or plants can form no estimate of what he will reap. At one instant corn is high, and he plants largely. By the time his crop is housed, the demand is at an end. At one moment there is a great demand for cotton, and the planter increases his force, anxious to get a large crop to market. By the time it is at market, mills are everywhere stopped, or working half-time, the demand for cotton has ceased, and his crop brings him in debt. Let him compare with this the steady growth of the home-market for all his products in the form of cloth and iron, during the five years that followed the passage of the tariff of 1842, and satisfy himself if efficient protection, adopted as a national, and therefore permanent measure, will not speedily give him certainty.

The nearer the market the greater is the value of labor and land; and the greater their value the greater is the power of consumption of food, and cloths and iron. The more distant the market the less is the value of labor and land, and the smaller their value the less is the power of consumption. Let every farmer and planter, then, exert himself to bring to his side prosperous consumers, with their looms and their anvils, and he will soon cease to be *compelled* to compete in the markets of England with the producers of Dantzic wheat or Hindoo cotton. Having made a market on the land for the products of the land, the price abroad will be fixed by the price at home, and certainty will then be attained.

COAL MINES OF THE SOUTH.

"The Mobile Herald speaks in high and hopeful terms of the coal now mined near Tuscaloosa, in Alabama. It says the coast trade there can be pushed to any extent, and urges the formation of associations of moneyed men for mining and transporting it at cheap rates down the river, for the supply of national mail and merchant steamers, plying on the Gulf. The British mail steamer of the 1st of February, it states, took 50 tons, and on her return from Vera Cruz 110 tons more, for experiment. The first parcel gave entire satisfaction, and, compared with the best Welsh coal, was found equal in almost every respect, and superior in some properties."

To mine coal and transport it cheaply to market are operations requiring combination of action, that can be obtained only by aid of concentration, and concentration can be obtained only by the pursuance of that course of policy which tends to bring the loom and the anvil to the side of the plough. Alabama abounds in coal, that is worthless for want of a market. She has corn in abundance to feed the men who would mine the coal, and she has cotton for which she needs a better market than that which she obtains by sending it to Manchester, there to be combined with the poor cotton of India, and returned to her plantations, to be worn by men, and women, and children, who waste more labour every year than would, if properly employed, pay for all the iron and cloth they consume. Let her learn to combine the coal, and the food, and the wool, and the ore, into cloth and iron, and she will speedily obtain cheap transportation for all her products, doubling the value of both land and labor.

DAIRY FARM.

[From "Transactions of the New York State Agricultural Society."]

Statement of Alonzo L. Fish, of Herkimer county, in relation to the general management of his dairy farm, which received the first premium of the New York State Agricultural Society.

A REPORT of the management of A. L. Fish's dairy farm, in 1844, and result of three years operation.

My farm contains one hundred acres of cleared land, which lies in Litchfield, Herkimer county, on the upland, eight miles south of the Mohawk, where it is subject to deep snows, bleak winds, large drifts, and cold long winters, which not unfrequently protract foddering season for cows to seven months and a half.

The soil is a yellow loam, mixed with clay and gravel; and so much inclined to pack as to make rather hard tilling. When a piece of ground is to be seeded to grass, it is ploughed in fall, so that frost may pulverize it. Manure is drawn on when convenient, in winter or spring, on snow, that the soil may not be packed by travel of team, and left in heaps to prevent its drying and evaporating till ploughing commences. It is then spread, and thoroughly mixed with the soil, by ploughing and dragging, as early in the spring as the season will admit, so that the grass may get a deep root while the soil is light, and grain and weeds get so large as to shade and keep it back. Spring wheat or rye are sown to seed with it, as they can be sown early, and shade less than other grain. Eight quarts of timothy and two of clover, are mixed and sown per acre. Strict care is taken that the young grass is not grazed the first season, as it would pack the soil and pull up many of the young roots.

It is a principle of Nature, fixed in the vegetable kingdom, that the root of a plant will not grow and flourish without the aid of atmospheric air, and leaves or top above ground to discharge their regular functions.

Hence my cows are not allowed to graze on my meadows, spring nor fall, to strip the roots of their natural clothing and pack the soil, to exclude the necessary circulation of air. Canada thistles, dock, and all foul weeds are cut below the surface, so that there is no top to aid the root to get out of its crippled condition; the operation is repeated a few times, if necessary, and they are dead.

Cows are kept from grazing pastures in spring for the same reason, and the first growth of the top is preserved to strengthen and invigorate the roots to get a firm, deep hold in the soil, while Nature is making her main effort. One bushel of plaster is sown per acre, as soon as the main bulk of snow is gone in April.

When the ground is settled and grass grown so that cows can get their fill without too much toil, they are allowed to graze an hour only the first day; the second day a little longer, and so on till they get accustomed to the change of feed before they are allowed to have full range of pasture. Shift of pasture is frequently made to keep feed fresh and a good bite. About one acre per cow affords plenty of feed till the first of August. If enough land was turned to pasture to feed the cows through the season, it would get a start of them about this time and be hard and dry the balance of the season. To avoid turning upon my meadows in fall, I take one acre to every ten cows, plough and prepare it the fore part of June for sowing. I commence sowing corn broadcast, about half an acre at a time, so that it may grow 80 or 90 days before it is cut and fed. I have found by experiment that it then contains the most saccharine juice, and will produce the most milk. If the ground is strong, I sow two bushels per acre; more if

the ground is not manured. The common yield is from 15 to 20 tons (of green feed) per acre. About the first of August, when heat and flies are too oppressive for cows to feed quietly in daytime, I commence feeding them with what corn they will eat in the morning, daily, which is cut up with a grass scythe and drawn on a sled or wagon to the milking barn, and fed to them in the stalls, which is one hour's work for a man at each feeding. When thus plentifully fed, my cows have their *knitting* work on hand for the day, which they can do up by lying quietly under artificial shades erected in such places as need manuring most, and most airy, by setting posts, putting poles and brush on top, the sides being left open. These shades may be made and removed annually, to enrich other portions of soil, if desired, at the small expense of one dollar for every ten cows. My shade trees are all cut down, so that if I have occasion to till the soil, there is no forest trees to drink up the nourishment that circulates in the air to a wide extent around them, before it reaches the weaker class of vegetables below, nor roots to prevent a thorough cultivation of the soil to get the benefit of its partial richness. At evening my cows are fed whey *only*, because they can feed more quietly with less rambling, and will give more milk by feeding most when dew is on the grass.

Saving and Application of Manure.—No one item enters more largely into the account of the economical farmer than saving manure; the means of which are simple, cheap, and in the reach of every one who has strength to till the soil.

The cheap method I have adopted to save manure, is by sinking hogs-heads with one head, at the discharge of slop-drains and troughs that catch the urine from my stables. A hollow bass log, twelve feet long, is split, making two halves, which are settled into the earth, the two lowest ends meeting in the centre, under which point is placed a large tub as a reservoir. The earth is made descending to these troughs on each side, and bedded with clay, pounded down, to make it water-tight, to convey the liquid manure that drains from the heap into the reservoir. Four boards are nailed together and set into the reservoir, forming a stationary box to receive a cheap board pump, to raise the liquor whenever the heap needs moistening. Straw, coarse weeds, swamp-muck, ashes, lime, night soil, offal, carrion, and all surplus substances convertible into manure, are piled upon this platform (24 feet long) a sufficient quantity to absorb the urine caught from stables, chamber slops, strong suds, salt brine, and all kinds of slops of any virtue as manure; these are drawn with a vehicle fitted for it and discharged into one end of the bass trough, which conducts them to the reservoir to remain till needed; the compost-heap is kept covered to prevent being leached by excessive rains; this heap soon becomes a stinking mass, and when used is mixed with the soil to prevent its evaporation.

Cutting and curing Fodder.—All kinds of grass are cut for fodder, if possible, near the time when the blossom closes, as it soon after becomes too much like grain straw for milch cows. All kinds of fodder intended for cows are cut before the seed matures, and cured without being wet with dew or rain after wilting, and dried so that its color will not change in the mow; four quarts of salt per ton is used in packing hay when necessary.

Feeding and Management of Cows.—He who would be a successful feeder, and make large products with moderate means, must look well to the physical economy of the animal in feeding.

The capacity of cows for giving milk is varied much by habit. In fall, after the season of feeding is over, I feed four quarts of wheat bran or shorts, made into slop with whey, or a peck of roots per day to each cow till milking season closes, (about the first of December.) When confined in

stables and fed hay and milked, they are fed each one pailful of thin slop at morning before foddering, and at evening, to make their food more succulent, and they will not drink so much cold water when let out in the middle of the day. In cold weather, cows kept well attended in warm stables. No foddering is done on the ground. The supply of milk is kept up, while the cows get in good flesh, their blood and bags are left in healthy condition, when dried off. This flesh they hold till milk season in spring, without other feed than good hay. They will not get fleshy bags, but come into milk at once. About the first of April they are carded daily, till turned to grass. Wheat bran in milk, or whey slops or roots, are daily fed, as they are found best adapted to the nature of different cows, and most likely to establish a uniform flow of milk till grass comes.

Every possible means are used to keep perfect quiet among the cows, in order that their habits may become regular; when in heat, they are confined and fed until the excitement is over.

No dog is allowed to be kept on the premises, and no cow driven faster than a walk; they are let into a milking-barn at a whistle, as a sign that they may come in and take the whey—when they readily take their places, four feet apart, when one whole side, (twelve in number,) are confined with a single motion of a spring lever; and when milked, are released at once in a like manner, by means of a shaft, so that one or more may be confined or released separately, without interfering with the general arrangement. When standing on the milking floor, the fore feet are several inches highest, which brings the bag forward from the hind legs, so that it is easier of access, and makes her give her milk down more freely. None are allowed to milk, unless able to milk quickly and thoroughly, which is done at five o'clock in the morning and evening. When a cow's bag is hard and feverish, it is washed with salt brine, or salt and water made cold with ice. This is a sure remedy. The best preventive is thorough milking. Whey is fed morning and evening, through flush of feed, after souring twenty-four hours. Wheat bran is mixed to prevent cows from scouring. Strict regularity is observed in feeding at all times. Bran and roots are fed daily till grass gets heart enough not to scour the cows. Nothing is fed but whey from the first of June to the first or middle of July; the feed then increased as grass diminishes. If cows are allowed to shrink in milk in July and August, and their feed then increased after being with calf, they will not come back, but run to flesh. I feed with a view to keep up a uniform flow of milk from the first to the last of grazing.

Manufacture of Cheese.—Calves' rennets *only* are used, after being dried one year. There are less animal properties in them than in new rennets, and will not make cheese swell in warm weather, and on shrinking, leave them like honey-comb, full of holes, with a rank flavor.

Calves, whose rennets are designed for cheese-making, are not allowed to suck sick cows, or those giving bad milk, but are fed with plenty of good milk, from five to ten days old; twelve or fifteen hours after sucking, when the gastric juices are most abundant and pure, the rennet is taken out and stretched on a bow; as much fine salt is added as will adhere without draining, and hung in good air to dry. Milking is done in tin pails, strained through a large tin strainer into a tin vat, where it is not skimmed nor moved till the cheese is made. The pails are set into a common sap-bucket, which being light and smaller at bottom than top, a litle press on the pail will fasten the bucket to it so that it carries with the pail without any inconvenience. A light tap on the bucket will drop it, and leave the pail clean and not bruised. A tin vat, large enough to hold the whole milk, is set within a *larger wood vat*, with one inch space between the sides and

bottoms of the two, to admit water, which is cooled by ice and heated by steam, which water cools the milk to take out the animal heat, warms it to receive rennet, remains and heats whey and scalds curd. It is discharged by a cock to pass off into a tub, and scalds bran or meal for slop feed, when it is required. Scalded feed is required daily when cows are milked on hay feed. A large reservoir is built of stone and cement, to contain fifty hogsheads of rain-water from buildings, to discharge by a cock into the above described space into a steam generator or into a tub, or any other place in the lower rooms, where it is desired. A pump affords water to this apparatus in case of drought. Thus the same water is made to perform three distinct offices, by no more labor than to turn three cocks with thumb and finger.

After water in the reservoir is not wanted for cheese-making, a pipe conducts it into the top of the ice-house to freeze in solid mass in winter, for cooling milk the next season. No skimmer, pail, or dipper, is required about this apparatus, only to milk in, as the cream which rises over night is not separated, nor no dipping of milk, whey, or water. The heating is done daily, by a handful of chips, or four quarts of charcoal, and all shift of apparatus can be made with one hand while the other is employed in the milk or curd. A young man is hired at $11 per month, for eight months, to take the whole charge of nursing. feeding, making and taking care of milk and cheese through summer, and does no other business. He is required to keep a register, daily, of the variation (if any) of heat, salt, quality and effect of rennet, number of cows milked, quantity of milk from which cheese is made, condition of curd when put to press, when cheese is put on shelf that it is weighed and numbered upon the bandage, so that when cured the result of certain variations may be known. An inch pipe passes from the steam generator and discharges steam into water under the tin vat; in ten minutes the whole mass is warmed to 90° to receive rennet. The steam is then turned off (which would otherwise be lost) into a tub which stands high enough to discharge into the cheese vat and scald it after the cheese is made. Hot water is drawn at any time from the same to cleanse pails, cloth hoops, &c. Calves' rennets only are used, after being one year dry, they being less apt to make cheese swell in warm weather, and of better flavor. A piece of rennet, to bring curd in forty minutes, is pounded fine in an iron mortar, and soaked a short time in warm water mixed with a little annatto, drained, strained, and put into the milk. When come, the curd is cut in large pieces with a wood knife, thickest in the middle, to give it a slight pressure before there is much surface exposed to be rinsed by whey; after standing ten minutes, the pieces are cut smaller with the same knife, then broken up by putting the hands to the bottom of the tub, bringing them through to the top, with fingers spread, with a slow motion, to give it all a slight pressure without tearing fine while tender; heat is kept as high as 88° while working; steam let on; the motion and pressure with hands increased with increase of heat and toughness of curd; heat is kept up to continue the action of the rennet, as it is most active when warm; heat raised to 98°; the steam is then turned off; it is kept at that heat thirty minutes. The scalding is now done; the water and whey are discharged, one pound of fine salt to fifty of curd is added, while warm, to shrink the curd and prevent holes in the cheese. After getting cool it is put to press; the pressure is from five to seven tons; in six hours is turned into clean cloth, and again in twelve hours more is taken out of the press and put upon the shelf, weighed, bandaged, greased with oil of whey butter, turned daily. No greater heat is ever used in the operation than the natural heat of milk, (98°.)

My cheese are pressed half as thick as they are wide, because by contracting the base, the pressure is increased in pressing, which makes them more solid, less surface exposed to the flies, less also on the shelf to get rancid. They are turned on the shelf more easily, take up less room, and when packed are safer to ship.

Two hundred bushels of shorts, at nine cents per bushel, and twenty bushels of oat meal, at twenty cents per bushel, amounting to $22,00, has been fed since the first of May, with whey. No swine are kept on the premises; all coarse feed, such as roots, slops, apples, &c., (usually fed to swine,) are fed to cows, because I have proved by three years' experiment, that such feed will make more pounds of cheese when fed to cows, than pork when fed to swine; and as much flesh upon the cows as is made in pork, in addition to the cheese; and require less hay and pasture. A suitable portion of land is tilled annually to use up the manure of stock and compost, to keep meadows well seeded, and raise grain and vegetables for family use.

The average quantity of cheese (market weight) made from each cow, in 1842, was 714 lbs. Do. in 1843, with one quarter heifers, 650 lbs. Made in April, 1844, from scattering cows, 650 lbs.

Made this season, since the first of May, from 25 cows, three of which were three year old heifers . . . . . 14,163 lbs., an average of 4 lbs. per day for 4¼ months. Add . . 650 lbs.

14,813 lbs., an average of 592 lbs. made this season, and with the usual quantity made the balance of the season, will make an average of 700 lbs. per cow. Annual average per cow, for three years, 680 lbs. sold; average price for three years, $6, delivered at canal. Average net per cow, $41.40.

In 1842 and '43 the farm and dairy was leased to a tenant, reserving three-fifths of the products myself, the tenant two-fifths. In 1844 I hired one man to make cheese and take care of cows, at $11 per month, for 8 months, and one for the same to work on farm. Extra help is hired in haying and harvest.

[From the Cultivator.]

HOW DO FLOCKS OF SHEEP RUN OUT?

EDITORS CULTIVATOR:—The opinion is quite prevalent among farmers, that flocks of sheep that are several years confined to one locality, deteriorate, or, as frequently expressed, "run out."

That flocks do sometimes deteriorate, when confined to one locality, I do not doubt; but when such an event actually occurs, I apprehend it would be quite as judicious, and would quite as effectually restore the health and vigor of the flock, to dispose of the *proprietor* and retain the *sheep*, as *vice versa*. That this running out is owing to bad management, and *not* to any other local cause, I have no doubt, and it may be mainly included under two heads: first, in *breeding;* secondly, in *feeding*.

The system of close, or "in-and-in" breeding, beyond a given point, and that point not *very* remote from the starting point, I believe to be very injurious to constitutional vigor. But, as the question has been discussed in your columns, I will not now enter into the argument.

Constitutional vigor in sheep, as well as in other animals, I regard as being of paramount importance; without it, light fleeces, deformity and disease, are constant attendants.

The form of a sheep should be as much the object of care and solicitude as the form of a horse; while the former with many is scarcely noticed, with the latter it is almost the only criterion of value. Who would undertake to say that a long-legged, thin-shouldered, narrow-chested, slab-sided, loose-jointed horse is possessed either of constitutional vigor or hardihood? Indeed, such an animal would be considered by every one as comparatively, if not utterly valueless; while thousands retain sheep equally faulty, from which to propagate, and at the same time, the well-shaped, the vigorous and hardy, which from these circumstances have a tendency to fatten, are sacrificed to the drover and the butcher's knife. Great care should therefore be taken, not only in selecting *bucks*, but in breeding *ewes*. We should look at the *whole* sheep—should have an image of perfection in our minds, and make every selection with a view to attain that object. It is not texture of fleece, or weight of fleece, or symmetry of form, separately considered, but the combination of the greatest number of desirable points and qualities.

The question arises in this connection, how shall we dispose of the refuse of the flock? I answer, a separation should be made soon after shearing; the choice lambs and breeding ewes, intended for preservation, should be put into good pastures; no buyer or butcher should be allowed to look "over" into their enclosures. The refuse, or those devoted to *destruction*, should be placed, if possible, in better pasture, and should be fed for a month or two in the fall with corn or meal, or with turnips, until fit for slaughtering.

As sheep increase in numbers, on a given number of acres, other things being equal, the amount of food per head of course diminishes. What would fully feed fifty, might barely subsist seventy. Now let us look at the comparative profits. Good keep and poor keep will make at least one pound difference in the weight of fleece. Say 70 head at $2\frac{1}{2}$ lbs. per head, $70\times2\frac{1}{2}=175$ lbs.—50 head at $3\frac{1}{2}$ lbs. $50\times3\frac{1}{2}=175$—making weight of fleeces equal. Loss by *winter-killing*, on account of poverty, from the 70 poor sheep, say 10 head; 50 in good condition, *no loss*. The account now stands 50 to 60. The *increase* from 50 good sheep would doubtless be greater than from 60 poor ones; besides the wool account would now foot up 25 lbs. in favor of the good-conditioned sheep. So that *well fed*, as well as WELL BRED, should be the wool-growers' motto.

Sheep are large feeders, and require, especially in winter, much care. Large flocks should, particularly at that season, be divided into smaller ones, not to exceed fifty or sixty in each; the weak and the strong, and the small and the large, being kept in separate parcels.

They can then receive care and feed severally, according to their respective conditions. A sheep in good condition has a better appetite, and will consume coarser food than one which is poor; but if suffered to run together promiscuously, they will crowd away the weaker ones, and appropriate to their own use the choicest of the food. Wool grows much faster in winter than in summer; therefore, as wool is formed or made of *feed*, and not of air, as some seem to suppose, it is necessary that keep and care be increased accordingly. Otherwise there will be an inevitable "falling away,"—the fat and muscle previously acquired will waste away to supply the growth of wool.

During the next twenty years, the western part of Virginia, the State of Ohio, the hilly portions of Kentucky and Tennessee, with perhaps Indiana and Michigan, are destined to be the great wool regions. The East cannot compete with us in this article, but will find more profits in the products of the dairy, beef, mutton, and the coarser grains.

Solon, O. CHAS. R. SMITH.

[From the Farmer and Mechanic.]

PROFITS OF HENS.

"'Dr. I. Barstow, of Chicago, kept an account of the expense and income of fifty hens, for one year. The cost of keeping on corn was about twenty-five cents for each hen. The hens averaged ninety-one eggs each. One of the editors of the *Prairie Farmer* states that he has kept forty hens the past year; that the cost was about the same as given by Dr. Barstow, but the fowls averaged only sixty-five eggs each. The fowls in both cases were confined to a yard, but one lot of them were allowed to have their liberty for a part of each day. They were fed with fresh meat occasionally.'—*Albany Cultivator.*

"Remarks.—The estimate of expense here given for fowls kept confined appears far less than it should be to maintain them in good growing condition. We have now more than one hundred on hand, and purchase food at prices ranging from one and a quarter to one and a half cents per pound. Meat, which is regularly given them, costs from two to three cents; potatoes less. The *average* range of prices is here given. The cost of keeping has never been less than one cent, or more than two cents, a head per week. Two cents each, if fed with all grain, will not be far from the amount, and it cannot well exceed this sum. One cent per head is not sufficient, and dry swill, such as pealings of potatoes, turnips, cabbage leaves, boiled potatoes, &c., together with meat, will be required to constitute good keeping. Our grain bill *now* is one cent for each fowl, corn being at present seventy-five cents per bushel: to which boiled potatoes, &c., are added to make up the deficiency. A final statement will be given when the stock of vegetables on hand are consumed. The hens are laying well considering the season of the year, and some *particularly bad management*, which we may allude to hereafter. We now (January 19) count two hundred and sixty-two eggs, commencing with one on the twenty-ninth day of November, the thirtieth of which month, together with the second and fourth days of December, are the only blank days; and, considering the uncertainty and difficulty of our new experiment, there remains the flattering hope that ''tis pretty well done.' B*."

[From the Model American Courier.]

HOW TO CATCH A SHEEP.

In catching sheep, never seize them by the wool on the back, as it hurts them exceedingly, and has in some cases been known to kill them, particularly in hot weather, if they are large and fat. Indeed the best way is to avoid the wool altogether, and to accustom yourself to take them by the hind leg, or what is still better, by the neck, placing one hand under the jaws, and the other at the back of the ears, when, by lifting up the head, a child may hold almost any sheep. But much depends on how a flock is treated. Few people are sufficiently gentle with sheep. In Maryland, and south of it, sheep are rarely approached near enough to touch or catch them, except as farmers are themselves treated, in all countries, and alike by tyrants and demagogues, when they are to be *sheared or slaughtered.*

When, for the first named purpose, sheep are to be caught in the region referred to, they are huddled up in the corner of a large pen, as often as there are sheep in the flock; each time frightened and worried, until the shearer runs in and grabs by the wool the first one he can catch. The residue of the flock is then left until that one is divested of his wool, and small bits of his skin here and there, and then turned loose, as the farmer is after the election, until the next shearing time. When brought up to

be slaughtered, the only difference is that the sheep is attracted by a grain of salt, or a handful of corn, while the farmer is charmed with the sound of the drum and fife, and liberty and glory!

By kind and gentle usage, and occasional salting, a man may have his sheep so tame that he may play with them, as every man that has a heart will sometimes do with his dog. At any rate, the feeling and thoughtful farmer will never suffer his sheep, or any thing else under his guardianship, to be unnecessarily terrified, or otherwise ill treated.

"I would not enter on my list of friends,
Though graced with polish'd manners and fine sense,
Yet wanting sensibility, the man
Who needlessly sets foot upon a worm."

Wheat Crop in South Carolina.—It is a gratifying fact that the planters in the middle country of South Carolina have this winter sown fully twice as much wheat as has ever formerly been put in, in one season, heretofore. We learn that in Fairfield, a district which has never grown a large amount of this grain, extensive fields have been seeded—one planter having sown three hundred acres. Others, diverting their labor from the cotton culture to grading railroads, have sown their surplus lands in small grains. Greater pains have been bestowed on the preparation of the soil than usual, and the crop, from this cause, as well as from the mildness of the weather, is very promising everywhere. The verdant fields promise an abundance to the industrious, which should make our citizens happy and contented, even in "*Old South Carolina.*"

Better all unite in a policy that makes it the interest of capitalists, with their machinery, to go there into the heart of their fine cotton and wool growing region, to work up their raw materials, and to demand the wheat when it is made.

To Wool Growers.—Why don't you give more attention to your sheep, and take that pride that every farmer should do, in preparing your clip for the market? You should have it clean, free from burs, and properly tied up, instead of sending it to market in the dirty, slovenly, careless manner in which a great portion of the western wool goes into the hands of the first purchaser. Do this, and you will obtain ten or fifteen per cent. more for it. Don't say you have not time. That is not the fact; you have time. The real cause is probably you have *too much land.*

You are too much like the southern planters, who think they are doing well just in proportion to the *size* of their cotton fields. They, like you, never foot up bills at the end of the season, and learn that a little more time spent in doing a few things well, would be more profitable than running over many things and leaving all but half done.—*Iowa Farmer.*

Kentucky.—The Frankfort Commonwealth publishes several extracts from the report of the second auditor of Kentucky, from which we glean the following facts:

No. of acres land	19,425,663	valued at	$127,631,871
No. of town lots	29,215	"	19,140,378
No. of slaves,	192,479	"	60,820,378
No. of horses,	353,349	"	11,297,606
No. of mules,	41,081	"	1,533,740
No. of cattle,	495,538	"	2,030,621
No. of stores	3,320	"	7,916,570

The number of qualified voters is **139,613**, and total number of white males over **21** years of age **142,970.** The total number of tavern licenses **452.**

PREMIUM CROPS.

REQUISITIONS OF THE NEW YORK STATE AGRICULTURAL SOCIETY.

[Written for "The Model American Courier," by the Editor of "The Plough, the Loom, and the Anvil."]

THE list of premiums offered in New York has just been published. The minimum of crops fixed upon, *under* which no premium is to be awarded, is—of winter wheat, not less than 40 bushels per acre; spring wheat, 30; Indian corn, 80; barley, 40; rye, 35; oats, 70; buckwheat, 25; peas, 25; potatoes for the table, 200; potatoes, field crop, 300; ruta-bagas, (60 pounds to the bushel,) 800? sugar-beets, (60 pounds to the bushel,) 400; carrots, (60 pounds to the bushel,) 400; mangold-wurtzel, (same weight,) 400. We don't see that any premium is offered for hay.

These quantities being fixed as the minimum produce, when we look at the average crop of the whole State as her official returns show, what a wide margin we find to be filled up by higher skill and heavy manuring, as thus: in 1845, according to returns from each county by State authority, the averages were as follows: winter wheat averages 14 bushels per acre; oats, 26 · barley, 16; rye, 9½; Indian corn, 25; buckwheat, 14; peas, 15; beans, 10; potatoes, 90. Thus would it seem that the crops in most cases do not come to a third, in some cases not a fourth of the *smallest quantity*, which the Society have decided should be distinguished by a premium. This might leave some doubt about agricultural *progress* in the Empire State, were it not that the State Society, by its President, last year, reported "that the State of New York is improving its agricultural condition *every year testifies.*" If it be improving every year, and has yet reached only to the averages we have stated—14 of wheat, 25 of corn, 9½ of rye, 90 of potatoes, &c.—how low must it have been twenty-five years ago? Yet, in 1821, Earl Stimson, of that State, made throughout his farm—of oats, 60 bushels per acre; Indian corn, on 8 acres, 112 bushels; on 10 acres, 90; spring wheat, 34; barley, 60. And we have accounts, before the Revolution, of 11,000 bushels of potatoes from 16 acres—being 687 bushels to the acre, on new red land on the Hudson river; third year, 8496 bushels of potatoes—being 531 bushels to the acre; fourth year, in wheat gave 37 bushels to the acre; fifth year, in barley gave 730 bushels, or 45 bushels to the acre; sixth year, 630 bushels of peas, or 39 to the acre. All this was without manure, and that by a miserable system of the most exhausting rotations, as—potatoes, wheat—potatoes, wheat, barley, peas: all in six years! Is it to be wondered at, that the crops throughout the State have been brought down to the miserable averages we have stated? Still we are told, on the highest authority, that the condition of New York agriculture is improving, as "every year testifies!"—and who knows how low it might have gone, if it had not been for the premiums distributed from year to year?

After all, these facts bring to mind the doubt once expressed by one of the wisest, wealthiest, and best men the Empire State ever boasted—James Wadsworth. Said he—"I am doubtful as to the expediency of small premiums for cattle. I think the raising of these animals may be left to self-interest. Suppose you take a hint from Napoleon, and offer *very liberal* rewards for great improvements in agricultural implements;" and might not crops be left to the dictates of self-interest, as well as cattle? The Agricultural Society of New York appears to entertain a very different opinion, for while they have offered some 150 or 200 premiums for cattle and sheep—and nearly 100 of the amount of $10 and upwards, many as high as $20 and $25—under the head of "*Farm Implements,*" $10 is the highest for any single one, and that only in one case—a threshing machine. For the others they offered a "dip," and sometimes $2 or $3, or $5, besides the "dip;" but, done by such high authority, it must be "O. K."

FIRST COTTON FACTORY IN MONTGOMERY.

"The Flag & Advertiser" felicitates itself at the prospect of Montgomery becoming a manufacturing city. It says:—

"We are glad that Montgomery has at least made the first start. We have already a factory in various kinds of wood and iron. We understand that a movement is now being made to establish a cotton factory. It is proposed to organize a company with a capital of $100,000, to establish a cotton factory that will work 2,000 spindles. We understand that one or two gentlemen are ready to put up $10,000 or $20,000 to commence with. If the balance can be made up, the enterprise will be put in operation. It will be of incalculable benefit to this city and the surrounding country, and cannot fail to be profitable to those who undertake it. There never was a more favorable time to commence such an operation. The raw material is low, and to be had at the first cost at the door of the factory. Every thing is now at its lowest point, and every change must be for the better. It cannot fail to benefit the city also. Instead of that amount of capital lying idle, or being employed elsewhere, its benefits will be circulated right here. It will employ 200 operatives, and thus afford means of subsistence for 800 persons at least. This will serve so far to increase the population of our city, and enlarge the market for our farmers giving and returning reciprocal benefits to town and country. We trust that the gentlemen who have taken this matter in hand will go ahead. With ordinary judgment and prudence, they cannot fail to succeed. It will be a good thing for them—it will be a good thing for Montgomery—it will be a good thing for the State."

RESULT OF SABBATH-BREAKING.

A father, says Dr. Edwards, whose son was addicted to riding out for pleasure on the Sabbath, was told that if he did not stop it, his son would be ruined. He did not stop it, but sometimes set the example of riding out for pleasure himself. His son became a man, was placed in a responsible situation, and intrusted with a large amount of property. Soon he was a defaulter, and absconded. In a different part of the country he obtained another responsible situation, and was again intrusted with a large amount of property. Of that he defrauded the owner, and fled again. He was apprehended, tried, convicted, and sent to the State prison. After years spent in solitude and labor, he wrote a letter to his father, and, after recounting his course of crime, he added—"*That was the effect of breaking the Sabbath when I was a boy.!*"

Exodus, xx. 8.—Remember the Sabbath day, to keep it holy.

Onions.—The onions which were sown at an early season, with an expectation of their growing to a sufficient size the first year for table use, should now be perfectly cleared from weeds, and the plants thinned to about three inches from each other; some of them should be pulled out at an early period, and kept clear of weeds, from the first sowing, till they arrive at perfection.

Onion seed may be now sown broadcast, on rather a poor soil, to raise small bulbs for the next year's crop, and if the ground should be very dry, you may water them occasionally.

INSTINCT OF ANIMALS.

The captain of a trading vessel, who now resides at Brighton, picked up lately a dog at sea, more than twenty miles from land. This circumstance may throw some light on the fact of dogs, which have been sent to France or Ireland from England, finding their way back. The present Earl of L—— sent some drafted hounds from his kennel in Cumberland to Ireland, where they were safely received, and a receipt given for them to the person who brought them over. Three weeks afterwards two of these hounds made their appearance at Lord L.'s kennel, though in a very exhausted state. A gentleman also informed me that a pointer dog which had been left at Calais made its way over to England. But the most amusing fact of this kind that I know of is one that was related to me by a gentleman on whose veracity I can place most implicit reliance; and though it may appear to some of my readers to border upon the marvellous, I think it too entertaining to withhold it. He informed me that a friend of his, an officer in the Forty-fourth Regiment, who had occasion, when in Paris, to pass one of the bridges across the Seine, had his boots, which had been previously well polished, dirtied by a poodle dog rubbing against them. He in consequence went to a man who was stationed on the bridge and had them cleaned. The same circumstance having occurred more than once, his curiosity was excited, and he watched the dog. He saw him roll himself in the mud of the river, and then watch for a person with well-polished boots, against which he contrived to rub himself. Finding that the shoe-black was the owner of the dog, he taxed him with the artifice; and after a little hesitation he confessed that he had taught the dog the trick in order to procure customers for himself. The officer, being much struck with the dog's sagacity, purchased him at a high price, and brought him to England. He kept him tied up in London some time, and then released him. The dog remained with him a day or two, and then made his escape. A fortnight afterwards he was found with his former master, pursuing his old trade on the bridge.

Nor is a dog the only animal which has shown an extraordinary faculty in finding his way home. The following anecdote is mentioned in a note in Messrs. Kirby and Spence's Entomology, who state that they had it from Lieutenant Alderson of the Royal Engineers, who was personally acquainted with the facts.

In March, 1816, an ass was shipped at Gibraltar on board the Ister frigate, Captain Forrest, which was bound for Malta. The vessel having struck on the sands off the Point de Gat, at some distance from the shore, the ass was thrown overboard, to give it a chance of swimming to land—a poor one, for the sea was running so high that a boat which left the ship was lost. A few days afterwards, however, when the gates of Gibraltar were opened in the morning, the ass presented himself for admission, and proceeded to the stable which he had formerly occupied, to the no small surprise of its former owner, who imagined that from some accident, the animal had never been shipped on board the Ister. On the return of this vessel, to repair, however, the mystery was explained; and it turned out that Valiante (so the ass was called) had not only swum safely to shore, but, without guide, compass, or travelling map, had found his way from Point de Gat to Gibraltar, a distance of more than two hundred miles, which he had never traversed before, through a mountainous and intricate country, intersected by streams, and in so short a period that he could not have made one false turn. His not having been stopped on the road was attributed to the circumstance of his having been formerly used to whip criminals upon, which was indicated to the peasants, who have a superstitious horror of such asses, by the holes in his ears, to which the persons flogged were tied.

I have also been assured that a favorite cat belonging to a nobleman, and who had been conveyed to his country-seat more than a hundred miles from London, found her way back to his house in town. Nothing can be more extraordinary than the way in which bees find their way back to their hive. Place it amongst hundreds of others, exactly similar in outward appearance, or at the top of a house in London, or concealed in the thickest wood, and the bee will regain it without the slightest apparent difficulty. Huber says they fly to it with an extreme rapidity, and as straight as a ball from a musket. Nothing can show more forcibly the wonderful instinct which has been given to these insects. If they experienced any difficulty in finding their homes, how much time would be lost, and how inadequate would all their labors and industry be, to furnish a sufficient store of honey to exist upon during the winter! I have always observed that when a fresh hive has been brought to my garden from a distant place,

the bees employ themselves on first leaving it, not in collecting honey, but in making themselves acquainted with all the neighboring objects, and these objects may possibly serve to guide them to their respective homes. Some naturalists are of opinion that this recognition of home by animals is the result of memory. Perhaps in some instances it is so, but memory could not have guided poor Valiante over two hundred miles of country, which he had never passed before; and the same unexplained instinct which brought him back to his stable at Gibraltar, may guide the bee to his hive.

This instinctive sagacity appears in some animals to whom we should have been less disposed to attribute it. Some pigs which had been brought in a sack fifteen miles through an American wood, by the next morning found their way back, from their new to their old home. I have also been assured that Welsh sheep have been known to find their way back, from the neighborhood of London, to their native mountains. It is no uncommon thing for dogs who have been taken a great distance in carriages, to make their way home again, and that in a very short space of time. A gentleman took a pointer dog in his carriage, to some shooting ground in Scotland, more than a hundred miles from his house. Upon receiving some correction from his master, he left him, and made his way back to his kennel.

A friend of mine had a poodle dog possessed of more than ordinary sagacity, but very little under command. To keep him in better order, his master purchased a small whip, with which he corrected him once or twice during a walk. On his return the whip was put on a table in the hall, and the next morning it was missing. It was soon afterwards found concealed in an out-building, and again made use of in correcting the dog. It was again lost, and again found hidden in another place. On watching the dog, who was suspected of being the culprit, he was seen to take the whip from the hall table, and make off with it to another hiding-place.

MANUAL OF MANNERS.

AMUSEMENTS AND RECREATIONS.

This is an important subject to consider, as the amusements adopted by different people either exhibit the peculiarity of their taste, or exercise a striking influence on their habits. "Show me the company a man keeps, and I will tell you his character," is an old proverb; it would be equally just to say, tell me the nature of any one's amusements, and I will declare to you the bent of his mind.

The amusements of women ought to be of a refined and suitable description. As they are restricted from many of the recreations of the stronger sex, they ought to choose their own mainly with a view to the improvement of their tastes, and the right formation of their demeanor. A cultivated understanding will find within itself many sources of entertainment which one less favored cannot so easily comprehend, or so readily adopt. Hence the necessity in genteel society of accomplishments. Music always brings its own enjoyments; and drawing and reading offer boundless sources of innocent, as well as useful and agreeable recreation. In a subsequent chapter on the occupation of time, will be found some observations, that appear to be pertinent at present, on the important subject of choice of books.

In fine weather, out-of-door exercises are particularly conducive to health, and to the cheerfulness of the temper. They are, therefore, preferable to in-door amusements. Young ladies should always bear in mind Dr. Gregory's advice to his daughters on this point. He recommended to them exercises in the open air, such as walking, and riding on horseback, as tending to give vigor to the constitution and bloom to the complexion, which riding too much in a luxurious carriage will deprive them of, or prevent them from acquiring. Our youthful queen's example in this respect ought to be more generally followed than it is, by all who have the opportunity of doing so.

The rule which ought to be laid down regarding amusements is, simply, judiciousness in selection, and not too great a devotion to one particular kind. Every one will be best able to judge for himself as to those recreations which are most appropriate to his inclination and circumstances. Amusements should be rendered subservient to instruction, especially with the young; and more attention than is usually paid to this branch of conduct should be devoted to it, by all having the charge or the training of youth.

Although, however, the subject of amusements in general may be considered too wide a field to be entered upon here, consistently with the design of this work, the writer may be permitted to make a few passing remarks on some of those amusements which are

usually set apart, in private society, for evening entertainment; such as music and conversational parties; and fancy and children's balls, play and gaming.

Perhaps the most agreeable recreation, either at home or abroad, is music; than which, if not carried to excess, as it sometimes is, there can be, for the time, no more, satisfying enjoyment. A cultivation of music is an essential accomplishment of young ladies; and an evening party is enlivened by an occasional performance on the piano, or the harp, by a skilful and unobtrusive player. Any attempt at vain display, however, is in bad taste, and cannot fail to be remarked. To affect inability, or pretend indisposition, when requested to sing or play, with the object of being pressed, is no mark of merit or modesty. A person conscious of his powers is proud of the opportunity to exhibit them, and does not assume airs on being solicited to do so. A readiness to comply is not, therefore to be considered a sign of vanity, or of presumption. A favor is always enhanced by being obligingly conferred. On the other hand, too great a forwardness to play is often a proof of pretension and self-sufficiency—nothing more.

In an evening party, whether music is going forward or conversation—whatever indeed may be the occupation of the rest—it is no unusual thing to see one of the company engaged with a book. This, notwithstanding the latitude allowed in modern society, is highly indecorous and impertinent towards all present. There are many persons who affect the literary character, without having any real pretensions to it, and think a practice of this kind calculated to gain that notice to them which they are, perhaps, conscious would not be granted to their conversational powers. It may arise from forgetfulness in some, from ill-breeding in others; but a truly polite man would not be guilty of such an impropriety. It is true that it is sometimes tolerated in persons of known studious habits; but this is only among intimate friends. Madame D'Arblay relates an interesting anecdote of Dr. Johnson, whose peculiarities of conduct and manner were very remarkable and are well known. At a party at the house of her father, Dr. Burney, Johnson, who, it is recorded, had no ear for music, was announced, during the performance of a duet by two of her sisters on the piano. "After the first few minutes he drew his chair close to the piano-forte, and then bent down his nose quite over the keys, to examine them, and the four hands at work upon them. But his attention was not to be drawn off two minutes longer from the books, to which he now strided his way. He pored over them, shelf by shelf, almost brushing them with his eyelashes, from near examination. At last, fixing upon something that happened to hit his fancy, he took it down, and, standing aloof from the company, which he seemed clean and clear to forget, he began, without further ceremony and very composedly, to read to himself, and as intently as if he had been alone and in his own study." Johnson, however, was a privileged person, and it would be unpardonable in any one less eminent to imitate his rudeness.

Fancy balls and masquerades are dangerous incitements to the youthful imagination, and too seductive and ensnaring in their nature to be encouraged by people of judgment and proper notions of virtue. Parents and guardians of youth ought to do all in their power to dissuade those under their care from attending them.

Indeed, to balls of every description, unless where very strictly managed, objections may reasonably be brought; as they have, undoubtedly, a tendency to foster vanity and create a love for display in the youthful mind. The writer admits the propriety—nay, even the necessity—of frequently bringing young people together, that, from the behaviour of each other, they may acquire that ease and freedom from embarrassment which are so charming in young persons. But, surely, many opportunities for this can be found, without having recourse to scenes where they are exposed to so much danger and excitement as at promiscuous balls and assemblies continued till a late hour. Mere juvenile balls, however, which are over by a seasonable hour in the evening, and at which the parents attend to watch the progress of their children in dancing, contain nothing which is open to any particular objection. To take children to the theatre, or to keep them from their homes later than they have been accustomed to, is foolish and prejudicial. The practice too, now so much in vogue, of young ladies going out to parties and staying late, is by no means a commendable one: it is injurious both to their complexion and their health.

A conversational party is one of the most rational, as well as delightful modes of passing an evening, and, when scandal or personal satire is not introduced, is far preferable to cards. By means of agreeable remarks, if the topics are judiciously chosen, much elegant instruction may be conveyed to the younger by the elder portion of the company. New ideas may be elicited, and the tastes of all present essentially improved. Information is such a desirable thing, that every mode for extending and imparting it ought to be sedulously adopted; and at an evening

party, a conversation in which every one can participate, may be rendered a very useful and interesting means of entertainment.

One of the most innocent of pastimes is the chess-board, which, from its scientific details, is well calculated to engage the understanding, and afford satisfaction to the mind.

Games of chance, where money is risked, should in all cases be avoided. Even though the stake is small there is a danger of its becoming the absorbent object for playing, and as soon as the contest begins to engross the attention exclusively, or assumes in the slightest degree the appearance of gambling, it ought to be abandoned that instant. There is no vice so odious as gaming, especially when a lady indulges in it.

At the card-table how much precious time is wasted!—time that must be accounted for. Gambling creates selfish and avaricious feelings, and is a most ensnaring practice. In many cases it leads to suicide, and in all to the utter ruin of both the temporal and eternal interests of those who engage in it; speedily corrupting the best principles, and overthrowing the most virtuous resolutions. Neither disgrace nor misfortune will cure it. Many who are just in everything else, make no scruple to cheat at play. Even men otherwise of amiable temper and sound discretion will get into a passion at their opponents, when fortune goes against them at the cards.

The poet says—

"Who gets by play, proves loser in the end!"

No vice, no pleasure is so pernicious in its effects, so prejudicial to the principles, so ruinous to the fortune, so destructive to the interests both of the soul and the body, as gaming is. Honor, virtue, wealth, peace of mind, character—all are offered up on its insatiable shrine. It is confined to no particular station in life. The servant in the hall must imitate his superior in the parlor—the tradesman in the tavern ape the lord in his palace. Days and nights are spent at play by people whose education fits them for higher objects, and whose station demands better employments.

Gaming, indeed, for which there is infinitely less excuse than for many other vices, degrades all to the same level, and reduces the conversation to one common and debasing point. How strong must be the infatuation for play, when men of rank and character, as at races, and other places of fashionable resort, consent to consort with persons of no rank and character at all! Is it avarice that impels them to it, or a desire to be relieved of care—or rather to be deprived of reason? If relieving them of their money and wasting their time be relieving them of their care, then their object is fully accomplished. At the cards, all distinction of rank or place is lost, and the high-born and the honorable are on a level with the mean and the degraded.

The many fortunes lost and families ruined by gaming ought to be a warning to the young. It soon demoralizes the mind, and overturns all the barriers of virtue and honor in the breast.

It is lamentable to think that, in spite of religion, morality, and common sense, this vice, so unsuitable to a rational and responsible being, should receive so much countenance among all grades of society, but particularly in genteel circles; from which it ought to be rigorously excluded. If discountenanced in the higher, it would soon lose its charm in the middle ranks; and none but the very lowest class in society would preserve and indulge in it.

"OLD TIME."

By Colin Rae Brown.

Men call me feeble, old and gray—
My strength and vigor pass'd away.
But strong and stalwart still am I,
Nor frail my step, nor dim mine eye.

What are a thousand years to me?—
But as a drop to yonder sea!
I've not yet reached my manhood's prime,
And laugh to hear men say, "Old Time."

Let centuries pass, and ages roll—
The year that my last knell shall toll
So far away in the future lies
That ne'er a tear hath wet mine eyes.

No! I am joyous, gay, and free!
Leading a life of mirth and glee.
But, Man! note well each passing chime—
Short is thy stay in the realms of Time!

Tait's Magazine.

THE WHOLE DUTY OF WOMAN.

WIDOWHOOD.

Is thy love stronger than death, do thy affections survive the decease of thine husband? Doth thy flame burn unextinguished, even as the funeral lamp of the sepulchre.

The obligations thou liest under are sacred to the remains of him thou lovest.

Be not pompous in the burial of the body, but embalm his memory and perfume it with fragrance of his virtues.

Let his frailties sleep with him in the grave, let his offences be remembered no more.

The care of a husband's honor is honor to a wife, and the tenderness to preserve it is most comely to the widow.

Art thou guardian to thy children, wrong not the fatherless.

The orphan and the widow are joined in calamity; therefore let them not rise up against each other.

Art thou young, and seekest a second espousal, experience hath not made thee wise.

Thou art as a galley-slave, who, in the madness of joy for his liberty, runneth himself again into bondage.

Art thou ancient, yet seekest the embraces of a young spouse, he will be the bane of thy latter days; he will bring jealousy to thine heart, and misery to thy gray hairs.

He will think himself a living body tied to a dead carcass, and hold thee loathed in his sight.

Dost thou think to fix the giddy appetite of youth? Thou mayest buy beauty, but it will not become thee; thou mayest paint, but it will not make thee fair.

When thou art dressed for the bridal morn, men shall say, is this decking for the living, thou deceivest thyself; if for the dead, make haste to follow him.

RELIGION.

Bright as the morning star, dressed in the radiance of the sun-beams, cometh the seraph of immortality.

She approacheth in white robes, her eye is fixed on the heavens, her knee is humbled in the dust, she giveth laws to the daughters of women.

She teacheth the way of virtue, her precepts are simplicity and truth.

Her profession is pure and undefiled, her temple is not filled with priests.

The duties she enjoineth are plain and easy; she dealeth not in the systems of speculative and vain philosophy.

She perplexeth not the mind with the hypotheses of scepticism, neither the cavillers nor the sophists are the teachers of her precepts.

Attend to her counsel, and abide by her instructions; so shall peace be the companion of thy reflections, and happiness the partner of thy contemplations.

In the practice of piety is satisfaction on earth, and its reward is on high, in the regions of bliss and immortality.

THE DUKE OF ATHOL AND THE MARKED SALMON.

It is some years since we first brought before the country a series of experiments that Lord Glenlyon (now Duke of Athol) was carrying forward on a large scale, to throw some light on the instincts and habits of the salmon, and thus add another leaf to the natural history of that celebrated fish. We are glad to say that the problem has now been proved to a demonstration that foul or spent salmon, after depositing their spawn in the gravelly beds of our rivers during the close months, seek their way back again to the sea, their rich pasture and feeding ground. After remaining there a certain time, they enter our rivers again, each to his own proper river, as cows grazing on a field to their own stalls at night, or as a bird to its nest; but how changed—the sickly, loathsome-looking kelt or red fish, now the rich, plump, and beautiful salmon. Friday morning last proved the truth of this to a certainty; for, on the gathering boat landing their fish at Orchardneuk, a few miles below Perth, a fine salmon, weighing sixteen pounds six ounces, in prime condition, was brought into the house, with a metal ticket, engraved "Duke of Athol, Dunkeld, No. 128," and fastened with copper wire round the tail. That this marked salmon had gone down to the sea there can be no doubt of, as it brought up with it a sure and certain proof of its being an inhabitant of the deep by the small insect known by the name of sea lice being found on it, never seen but on salmon new from the sea, and which falls off the fish when a few days in fresh water. It was on Balhopburn, one of Lord Wemyss's fishing stations on the Tay, a little above the quay of Inchyra, the marked fish was taken, on Friday morning, the 4th inst.—*Northern Warder.*

WELCOME.

A SONG FOR ANY DAY; BUT ESPECIALLY FOR CHRISTMAS AND THE NEW YEAR.

By the Author of "Proverbial Philosophy."

The following *seasonable* song is extracted from a beautiful little volume, entitled "A Happy Christmas," published for a charitable object, and edited by a Clergyman of the diocese of Norwich:—

YES! welcome, right welcome—and give us your hand,
I like not to stay in the cold;
If new friends are true friends, I can't understand
Why hearts should hold back till they're old;
For life is so short, and there's so much to do,
And so many pleasures and cares;
And somewhere I've read that, though angels *are* few,
They're frequently met unawares!

The eye of sincerity shines like a star
Through the clouds of suspicion and doubt;
I love its fair lustre, and lure it from far,
And wouldn't for worlds put it out:
Away with such wisdom, as risking the chance
Of killing your love with old fears!
The face that is honest is known at a glance,
And needn't be studied for years.

And when petty prudence would put me to school
About caution and care, and all that,
I trust that, like some folks, I yield to the rule
Of wearing a head in my hat;
But more that remains is better than brains,
And I know not that some folk *are* blest,
Like me, with a share in a custom more rare,
Of wearing a heart in the breast.

Then come with all welcome! I fear not to fling
Reserve to the winds and the wave;
And never can cling to the cold-blooded thing
Society makes of its slave:
Thou dignified dullard, so cloudy and cold,
Get out of the sunshine for me!
But hearty good friend! whether new one or old,
A welcome for ever to thee!

MARTIN F. TUPPER.

OUR BABE.

WE have at home a little babe. Her eyes
Are blue and beautiful, and flash out gleams
Of diamond light, like that which brightly beams
On stilly summer nights from starlit skies.
Her cheeks are tinted with the blushing dyes
Which Heaven—so wisely bountiful—bestows
In virgin freshness on the modest rose.
When, worn and sad, I seek the spot where lies
My lovely all—that infant's budding charms,
As she disports within her mother's arms,
Dispel my sadness, and her winning wiles
And crowing shouts provoke unwitting smiles,
Till every care is from my soul beguiled:—
Blest is the man who loves a little child!

THOMAS MACKELLAR.